GEORGIA SOFTWORKS

Universal Terminal Server for Windows
NT/XP/VISTA/2000/2003/2008

For GSW Telnet Server and GSW SSH2 Server

User Manual

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GEORGIA SOFTWORKS

Georgia SoftWorks Universal Terminal Server for Windows NT/XP/VISTA/2000/2003/2008

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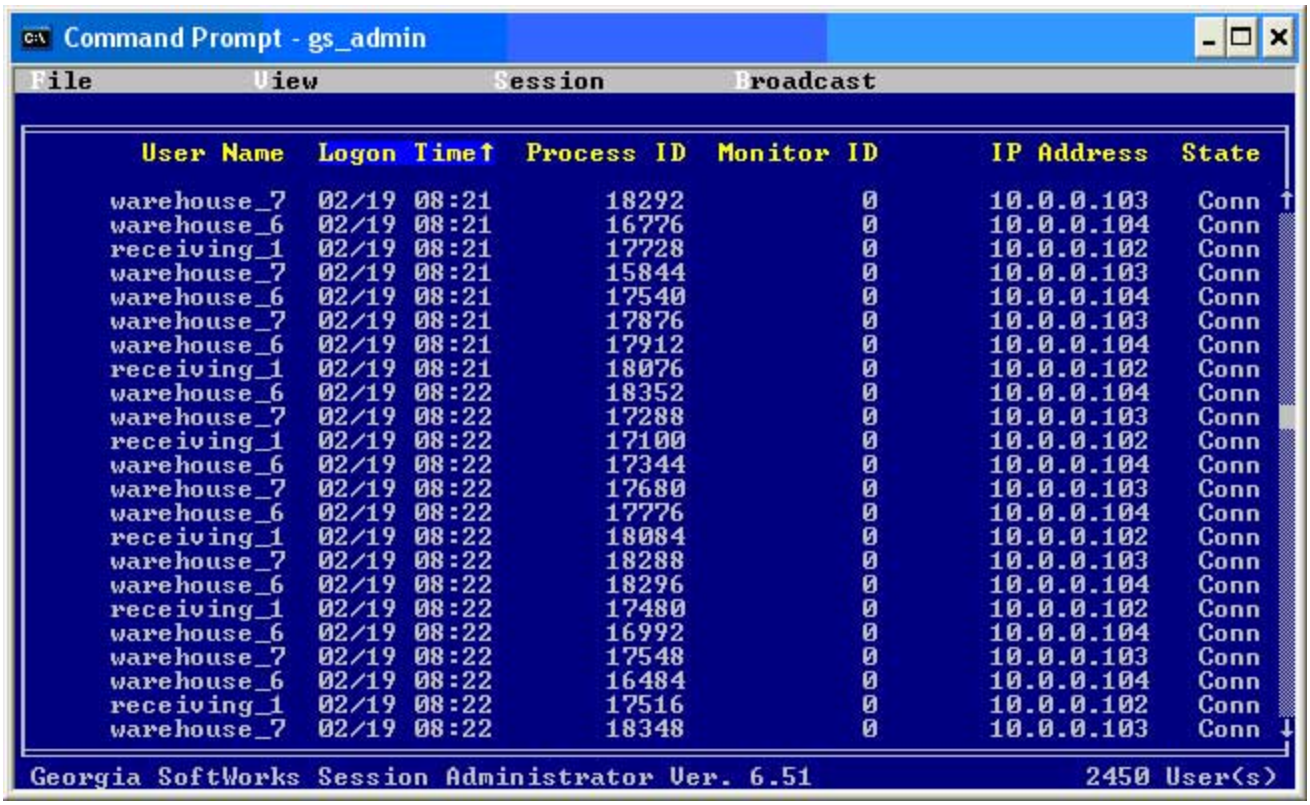

Actual screen shot in the GSW Lab of 2450 sessions connected during pre-release testing!

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Typographic Conventions

Italics:	are used to emphasize certain words, especially new terms or phrases when they are introduced.
Initial Caps Bold:	Words that appear in initial caps boldface represent menu options, buttons, icons or any object that you may click.
`Courier`:	This font represents anything you must type.
"<**enter**>"	This represents the enter key.

Definitions for this document

WINDOWS	Unless otherwise noted, refers to Microsoft Windows operating systems listed below. - Windows NT/XP/2000/2003 versions.
GSW	Georgia SoftWorks
Session	Refers to either a Telnet or SSH2 Session depending on the product purchased.
UTS	Universal Terminal Server

FEATURES AT A GLANCE
DO IT RIGHT OR NOT AT ALL

Security Pack - *The Only Secure telnet server!*

- Encrypted Login and Data Stream
- Strong 128 bit Encryption available – Telnet
- Super Strong AES256 supported – SSH2
- FIPS 140-2 Compliant Option available – SSH2
- Optional Connection Restrictions
  - User ID, IP Address & Counts, TOD, Client or Encryption Type
- Integrated with NT/2000/XP/VISTA Security

Speed Pack - *Fast, Fast, Fast - Incredible*

Keep Network Traffic and ISDN cost down

- Slow Link, Internet Support
- Proprietary Performance Algorithms, Data Compression
- Incredible client performance
- DOSBoss - DOS Application Booster!
- GSW UTS 64-bit platform Edition

Failure/Recovery Pack - *Multiple Advanced Failure Detection Methods*

- Complete Session Cleanup & NTVDM Cleanup
- Server Side Inactivity Timer, Client Site Heartbeat
- Session Saver- Resume work in progress after link failure
- Graceful Termination of DOS Applications
  - Upon abnormal termination of Client
  - On Link or Remote Computer Failure

Configurable child process termination upon session completion

Legacy Pack

- Full DOS Legacy Support
- MOUSE
- DOS Character Mode Color Graphics
- Function Keys
- Special Characters
- Automatic Screen Sizing
- Alt key support for all emulations

Works Great with Other Applications!

- Works GREAT w/ **SAPConsole** **+** Portable Printing
- Compatible with GSW RF FormMaker
- Compatible with VMWare ESX, Microsoft HyperV

Compatibility Pack

- RFC 854 Compliant – Connect from 3rd Party Clients
- RF Terminals, Wireless, Bar Code Scanners + more
- Multinational Character Support including Double-Byte and Unicode characters. Traditional & Simplified Chinese support
- GSW Mobile Clients Support for Simplified Chinese font GB!
- Works GREAT w/ SAPConsole **+** Portable Printing
- GSW Telnet Client for Pocket PC 2002/3 class of devices
- GSW SSH2/Telnet Client for Windows CE .Net V4.2/5.0 devices including but not limited to:

  LXE MX3X PSC Falcon 4410
  Symbol MC9060G Intermec CK30, CV60
  Psion-Teklogix 7535, 8525, WORKABOUT PRO

Utilities Pack

- File Transfers via Telnet/SSH2
- Change Password
- Remote Reboot/Shutdown, Terminate Telnet Sessions
- Configurable Port Numbers, Default Domains
- Execute Commands on the Client from a Telnet/SSH2 Session !

Emulations Pack

- SCO Console
- DEC VT 100/220/320/420
- Wyse 50/60, Symbol 3 x 40 series
- IBM 3101, IBM 3151, Perfect PC
- Automatic Logon, Color Re-Mapping
- Character Display Translation

Power Features Pack

- Session Administration –
  - Session Monitoring
    - ✓ Security - Monitor other telnet users. Observe dynamic screen activity exactly as it appears on their screen!
    - ✓ Quality Assurance - Remotely monitor data entry by employees
    - ✓ Training - Senior application users remotely help trainee's
    - ✓ Debugging - Developers remotely observe phenomenon described by users.
  - Session Shadowing
    - ✓ Session monitoring with Interactive Input!
  - Command Line Options for programmatic control of Session Administration
- Logon/Termination Scripting: User, IP or Global Based.
  - ✓ Allow a user to automatically enter a specific directory or application upon connection.
  - ✓ Optionally restrict users to a specific application
  - ✓ Run TSRs and Set Environment Variables upon connection
  - ✓ Disconnect network drives etc. upon termination
- True Client Side Printing - Printing the way you want it!
  - Print to the most convenient printers, at the server, at the client, across the Internet and more!
  - Up to **9** different printers **per user**
- Event Logging. Import useful User activity information for reporting into your application.
- High Performance Client that can be installed at as many locations as you choose at no extra cost!
- Automatic Version Update of the GSW Clients
- Broadcast Messages can be sent to one or ALL Sessions.

The Real Pioneers - Often copied but never equaled

Georgia SoftWorks: The True Innovators when it comes to SSH2/Telnet for Windows.
Great ideas that Georgia SoftWorks has pioneered for the GSW UTS for Windows!

- GSW UTS Mobile Clients Support Simplified Chinese with font GB!
- GSW Mobile SSH2/Telnet Clients for Pocket PC 2002/3 & CE .NET 4.2/5.0 class of devices.
- Automatic upgrade of GSW Clients from GSW UTS Server.
- File Transfer – Transfer files between the Server and Client via telnet!
- Session Saver - Reconnect to session after Link Failure and automatically resume work in progress!
- Auto Logon - RF Terminals and Telnet/SSH2 clients can quickly connect with minimal prompting.
- Session Shadowing - Interactive Input to other Telnet/SSH2 sessions.
- Execute Commands on the Client from within the Telnet/SSH2 Session!
- DOSBoss - MS DOS Application Performance Booster
- 128 BIT Strong Complete Data Stream Encryption – Telnet
- AES256 Super Strong Encryption – SSH2
- Complete Data Stream Encryption
- Session Monitor - Observe screen activity of other Telnet/SSH2 sessions.
- True Client Side Printing (Multiple Printers per session, Open Print Method (No client or OS restrictions)
- Working JAVA Client/Applet
- MOUSE Support
- Incredible performance algorithms never thought to be possible with Windows Telnet/SSH2
- Failure Detection and Recovery Methods
  - Graceful Termination of DOS Applications and Win32 Console Applications
  - Complete Session Cleanup, Complete NTVDM Cleanup
  - Server Side Inactivity Timer, Server Side Heartbeat
  - Client Side Heartbeat
- Special Bell Processing
- Expired Password Handling
- Perfect PC emulation where all keys and key combinations are handled
- Color to Monochrome mapping provided. Very useful for RF Terminals.

Georgia SoftWorks takes Telnet/SSH2 for Windows NT/XP/VISTA/2000/2003/2008 serious. We have a philosophy of continuous improvement and we are committed to:

- Continuing to be the leader in innovation with Telnet/SSH2 servers for Windows
- Providing the very fastest, most robust and secure terminal server for Windows
- Meeting the demands of industrial and commercial applications with a rock solid dependable product.
- Providing a level of customer service not experienced before with Telnet/SSH2 for Windows.

User Manual

Speed, Robustness and Ease of Use define the character of the Georgia SoftWorks Universal Terminal Server software for Windows NT/XP/VISTA/2000/2003/2008.

The Georgia SoftWorks Universal Terminal Server is the industrial quality software foundation supporting the suite of GSW server products including the GSW Telnet Server, the GSW SSH2 Server, the Session Administrator and numerous remote access utilities.

Thank you for purchasing the Georgia SoftWorks Universal Terminal Server Software for Windows NT/XP/VISTA/2000/2003/2008. You will be pleased with the performance and robustness provided with this product. Ease of use will be a significant time saver when using the Georgia SoftWorks Universal Terminal Server software. Complicated keyboard sequences are not required to map to the actual keys you want to send. The GSW UTS was developed to meet a need in the market that allows users to operate in a fast, reliable and uncomplicated fashion.

Windows is transformed into a truly multi-user environment with the GSW UTS software. Remote administration, full support for DOS Legacy applications, superior user control, *Session Monitoring/Shadowing* and Data Stream Encryption will allow you to utilize Windows as never before. True Client Side printing is also available for a Windows Telnet/SSH2 Server for the first time with the Georgia SoftWorks Universal Terminal Server. Session Saver and Pass-through printing **are excellent features for RF hand held terminal** applications.

RF Terminal environments will perform exceptionally well with the GSW UTS due to a rich set of standard features such as Session Saver, Pass-through printing, Automatic Logon, logon scripting, configurable timers and other features optimized specifically for RF terminal access.

The GSW UTS is compatible with the GSW RF FormMaker. RF FormMaker is an ActiveX object that provides Visual Basic[1] programmers the ability to quickly develop forms for display on RF Devices used in Client/Server applications. With RF FormMaker the programmer can create navigation structures, labels, input/output fields and other useful controls necessary to provide an efficient high quality user interface. The colors and attributes of Form and Controls are configurable allowing a quick way of producing themes. RF FormMaker is straightforward to use and is easy to integrate with your application.

RF FormMaker takes care of the creation of forms, controls, adding controls to forms, setting initial data, running the forms, and handling all user interaction with the form.

SAPConsole environments will enjoy the ease of operation with the GSW UTS as well as specialized SAPConsole features that include mobile printing, Session Monitoring and a streamlined interface with the GSW Rocket Terminal Engine.

[1] Visual Studio 2003 or Visual Studio 2005 is required for development.

Product Description

The Georgia SoftWorks Universal Terminal Server offers industrial quality Windows Telnet or SSH2 Services designed and built for the most demanding industrial and commercial applications.

The GSW Universal Terminal Server is the core software that provides the performance, reliability, consistency and powerful features required for demanding industrial and commercial applications. The GSW UTS is highly optimized and modular in design to integrate with protocol interfaces allowing access with remote clients. The standard protocol interface for the GSW UTS is the Telnet Interface; however an optional replacement SSH2 interface (GSW SSH2 Shield) is available. The SSH2 interface also has a Federal Information Processing Standards Publication (FIPS) 140-2 compliant option available for purchase.

When the GSW UTS is coupled with the GSW Telnet Interface software the resulting package is the GSW Telnet Server. When the GSW UTS is coupled with the GSW SSH2 Interface software the resulting package is the GSW SSH2 Server. The mechanism to couple the GSW SSH2 Interface is to obtain and install the GSW Telnet Server and then install the GSW SSH2 Shield. The installation of the GSW SSH2 Shield disconnects the Telnet Interface and installs the SSH2 Interface software resulting in the GSW SSH2 Server.

The features described in the User Manual apply to all interfaces offered unless specifically noted.

The GSW UTS and Client software is the fastest and most robust Telnet/SSH2 Server for Windows on the market. Full support for DOS Legacy applications including DOS character mode graphics, function keys, mouse and special characters allows you to work in a local mode when at a remote location.

The GSW UTS provides a level of robustness that is a cut above the competition. **Industrial** quality orphaned session detection and elimination *including* NTVDM's and attempted *graceful termination* of DOS legacy applications upon link and client PC failures are features pioneered by the GSW UTS software for Windows.

Logon Scripting provides system administrators with unmatched control over user connections. One function of *Logon Scripting* allows the user to automatically enter specific applications upon connection. *Logon Scripting* can also restrict the user to only execute a specific application. *Logon Scripting* can do much more (see page 158)!

Server Software

The GSW UTS Server is the software installed on your Windows computer. This software is responsible for establishing connections and spawning *agent* processes that manage each SSH2/Telnet session. The Georgia SoftWorks Universal Terminal Server software enforces the number of allowed simultaneous sessions.

Agent Process

A SSH2/Telnet session is created each time a connection is established. A connection is established when a user logs on to Windows NT/XP/VISTA/2000/2003/2008 system using a SSH2/Telnet Client. For each session that is created the GSW UTS software spawns an *agent process*. The agent process is responsible for managing and communicating with the user session. Screen optimizations are performed by the agent process to facilitate faster data transfers. The capability of a configurable *server side heartbeat timer* exists for use by the agent process to help identify link or remote PC failures. In addition the configurable *server side inactivity timer* exists to help identify abandoned sessions so that they can be properly terminated and made available to other users.

Client Software

The Georgia SoftWorks SSH2/Telnet clients are proprietary software that run on remote PCs and Pocket PC class devices and utilizes advanced features offered in the GSW UTS server software. The advanced features are propriety extensions that enable a wide range of functionality including mouse operation, enhanced printing methods, automatic update of client software and much more! Well designed optimizations are included that enable the GSW Server software for Windows to be the fastest SSH2/Telnet software available on the market.

The client software contains a configurable heartbeat timer that notifies the agent process of its presence. This mechanism helps to identify link or remote PC failures.

It is recommended that the Georgia SoftWorks Client software be used although it is not required. The Georgia SoftWorks Windows Telnet Server is RFC 854 compliant which allows any 3rd Party Telnet Client to be used. The GSW SSH2 Server allows connections from any third party SSH2 compliant client.

The Georgia SoftWorks clients offer the Enhanced printing method as a component of True Client Side Printing (Page 166). This allows users to print to their local printer even when connected across the Internet or RAS.

The HostName or IP address is displayed in the title bar of the Georgia SoftWorks Clients to provide an easy method of identifying to which host you are connected.

Many command line parameters are provided to enhance the convenience and power of the client. Please see page 66 for detailed descriptions of these parameters.

The GSW SSH2/Telnet Clients automatically update to the appropriate version for the GSW UTS Server when connected[2].

The GSW clients are available on a wide variety of operating system platforms ranging from Windows NT/XP/VISTA/2000/2003/2008 to Pocket PC 2002/2003. See the table on page 25 for a detailed list of GSW clients available for each platform.

[2] This feature is operational with version 6.26.xxxx and above.

Georgia SoftWorks UTS Product Configurations

GSW UTS Components Overview

The Georgia SoftWorks Universal Terminal Server is the core server software module that provides the reliability, consistency, robustness and powerful features that has distinguished GSW Server Products. The design of the GSW UTS facilitates integration of protocol and application interfaces producing industrial quality server products.

The protocol and application interfaces available for the GSW UTS are the GSW Telnet Interface and the GSW SSH2 Interface. The GSW UTS is not sold as a standalone product. The standard protocol interface provided is the GSW Telnet Interface.

Protocol Interfaces other than the telnet interface require an application interface installer to add the interface to the GSW UTS. The application interface installer for SSH2 is the GSW SSH2 Shield. When the SSH2 application interface installer installs the SSH2 Interface the Telnet Interface is disabled.

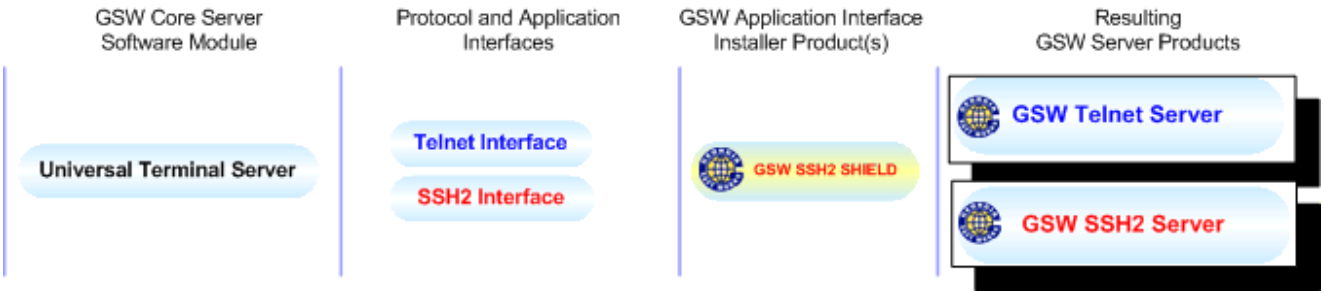


Figure 1: GSW UTS Components Overview

The features, utilities and clients are provided by the GSW UTS. Unless noted all features and utilities are available to all GSW Server Products.

The GSW UTS supports a wide set of emulations that allows connections from most third party clients. Compliant 3rd party clients can exist on any operating system. Of course GSW Clients are offered for Windows operating systems, Pocket PC 2002/2003 class devices and other RF devices.

A list of these Windows Operating Systems is on page 25 .

GSW UTS – Telnet Server

The standard protocol interface included with the GSW Universal Terminal Server is the Telnet Interface. No application or protocol interface installer is required.

The product purchased is the GSW Telnet Server. The installation setup is quick and easy. You can be up and running in the matter of minutes.

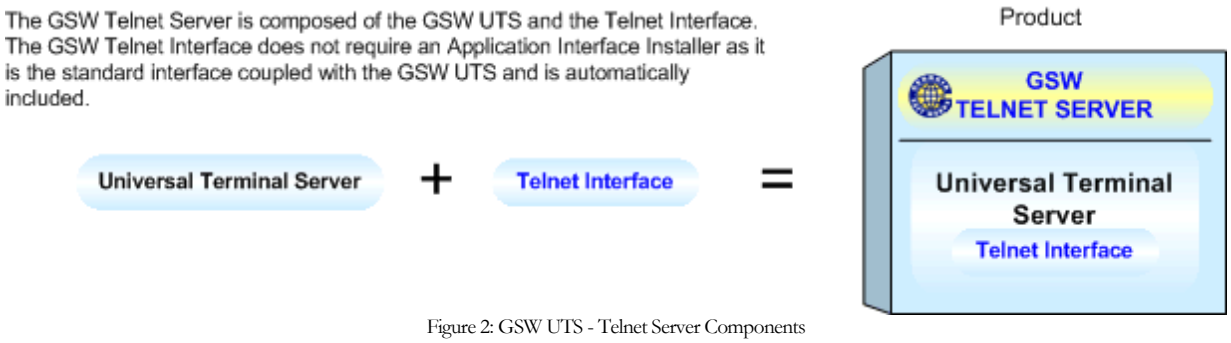

The GSW Telnet Server is composed of the GSW UTS and the Telnet Interface. The GSW Telnet Interface does not require an Application Interface Installer as it is the standard interface coupled with the GSW UTS and is automatically included.
Universal Terminal Server
+
Telnet Interface
=
Product
GSW TELNET SERVER
Universal Terminal Server
Telnet Interface

Figure 2: GSW UTS - Telnet Server Components

GSW UTS – SSH2 Server

The GSW SSH2 Server is obtained by purchasing the GSW Telnet Server and the GSW SSH2 Shield. The GSW Telnet Server provides the GSW UTS and the SSH2 Shield is the application and interface installer for the GSW SSH2 interface.

First the GSW Telnet Server is installed. Next the GSW SSH2 Shield is installed. Again the installation is quick and easy.

NOTE: When the SSH2 Interface is installed the GSW Telnet Interface is un-installed. This is done for security reasons as many view telnet as unsecured and thus should not be available to malicious third parties.

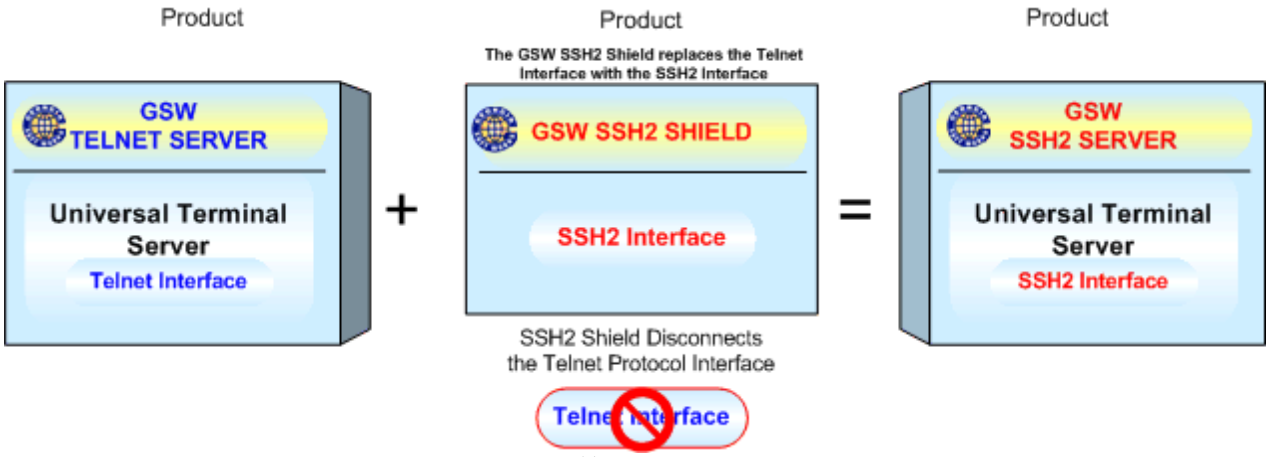


Figure 3: GSW UTS - SSH2 Server Components

Installation

Installation is simple and quick. The same installation program installs the server software and the client software. The installation software will prompt you for a *full* or *client only* installation if on a Windows NT/XP/VISTA/2000/2003/2008 system and automatically install client software if on a Windows 95/98 system.

GSW UTS 32-bit and 64-bit Editions

As 64-bit computing rapidly progresses towards mainstream computing, Georgia SoftWorks provides a 64-bit edition of the GSW UTS Telnet Server named the Georgia SoftWorks UTS x64[3]. This edition is for 64-bit editions of Microsoft operating systems (XP, VISTA and Windows 2003 Servers). The GSW UTS x64 provides all the performance benefits and addressing capabilities expected when running on 64-bit platforms. Additionally extraordinary high session counts can be attained with the GSW UTS when running on 64-bit platforms.

The GSW UTS 32-bit edition runs on 64-bit platforms as well as on 32-bit platforms. When running a GSW UTS 32-bit version on a 64-bit platform significant performance benefits are also realized.

If the application that you are accessing via the UTS is a 64-bit application then you should use the UTS x64. If the application you are using is a 32-bit application then the GSW UTS 32-bit edition is recommended.

When using the GSW Directed Terminal Input Output (DTIO) Engine, it is recommended to use the same platform edition of the GSW DTIO and GSW UTS. For example use the GSW DTIO x64 with the UTS x64.

Both the GSW UTS and GSW UTS x64 editions are included on the CD when purchased. Simply navigate to the corresponding folder to run the setup program. If the software is a downloaded rather than a CD then be sure to download the desired edition.

The GSW UTS 32-bit edition installs trouble free on either platform. The GSW UTS x64 will install only on a 64-bit platform. If you accidentally try to install the GSW UTS x64 on a 32-bit platform you will be alerted and setup will exit.

Georgia SoftWorks Universal Terminal Server (UTS) Setup
Your computer currently does not run a 64-bit version of Windows.
Please obtain a 32-bit version of our software and run the setup again.
Setup will now terminate.
OK

Figure 4: 32-bit platform alert.

The GSW Desktop client provided with all editions is a 32-bit client and will install on both 32-bit and 64-bit platforms.

[3] The GSW UTS 32-bit edition maintains the original name – GSW UTS.

Server Installation

From Windows NT/XP/VISTA/2000/2003/2008 perform the following:

Run the setup.exe program. The procedure is the same for both the GSW UTS and UTS x64, but be sure to use the setup.exe corresponding to the platform. The UTS x64 is identified on the setup screen as pictured below.

1. The Welcome screen of the setup program is displayed and you are reminded and urged to exit all windows programs before continuing. You are also reminded that you must have administrative privileges to install this program. Click **Continue.**

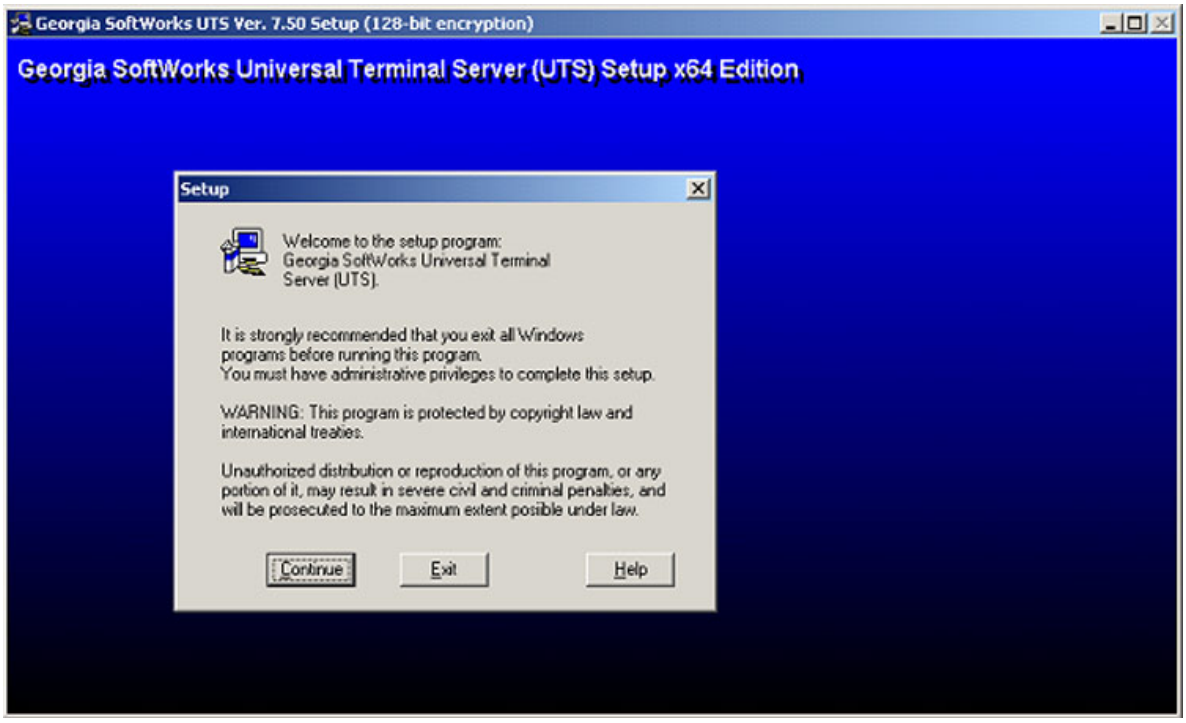

Georgia SoftWorks UTS Ver. 7.50 Setup (128-bit encryption)
Georgia SoftWorks Universal Terminal Server (UTS) Setup x64 Edition
Setup
Welcome to the setup program:
Georgia SoftWorks Universal Terminal Server (UTS).
It is strongly recommended that you exit all Windows programs before running this program.
You must have administrative privileges to complete this setup.
WARNING: This program is protected by copyright law and international treaties.
Unauthorized distribution or reproduction of this program, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under law.
Continue
Exit
Help

Figure 5: GSW UTS x64 Initial Setup Dialog

If you are installing the GSW UTS 32-bit edition then the text x64 will be omitted in the dialog above.

2. The Installation options screen is displayed. The choices are *Full Install* or Install *Client Only* software. For Windows NT/XP/VISTA/2000/2003/2008 systems that you want to install clients to connect select Full Install using the Radio Buttons. The Full Install installs the Server Software and the Client software. Click **Continue**.

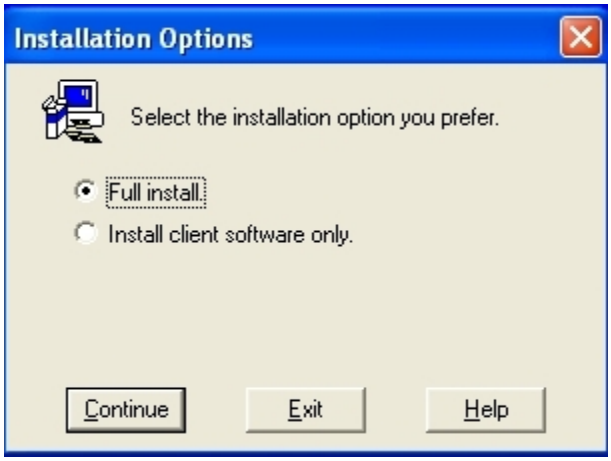


Figure 6: GSW UTS Setup Installation Options Dialog

3. A screen is displayed indicating the directory that the Georgia SoftWorks Telnet Server will be installed. The default is C:\gs_uts. You may change the installation directory at this time. *Note: If you install on a drive other than the system drive and have NTFS (on the installation drive) then you must make sure that the system has full permissions to get to the installation directory and subdirectories.* Click **Continue**.

Setup Path Dialog
The setup program will copy Georgia SoftWorks Universal Terminal Server (UTS) files into the following directory. No files will be installed in the system directories.
Path: C:\GS_TNET
A new program group will also be added to the Program Manager.
Continue
Back
Exit
Help

Figure 7: GSW UTS Installation Path

4. A progress meter window is displayed indicating the installation progress.

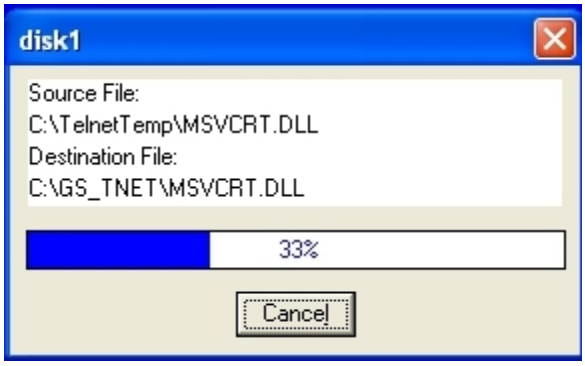


Figure 8: GSW UTS Installation Progress Meter

5. The Setup Succeeded screen is displayed. The service has been installed and is automatically started.

Setup Exit Message
Setup Succeeded.
Be sure to send in the registration information for your new software.
The service has been started. You may use the Services applet in the Control Panel to start and stop this service.
OK

Figure 9: GSW UTS Installation Setup Succeeded

Please view the readme.txt file as it may contain late breaking information about the telnet server that has not yet made it into the user guide. Release notes are also contained in the ReadMe file. *NOTE: TCP/IP must be installed and operational. TCP/IP comes as part of Windows NT/XP/VISTA/2000/2003/2008.*

6. A "Georgia SoftWorks UTS Program Group" is created.

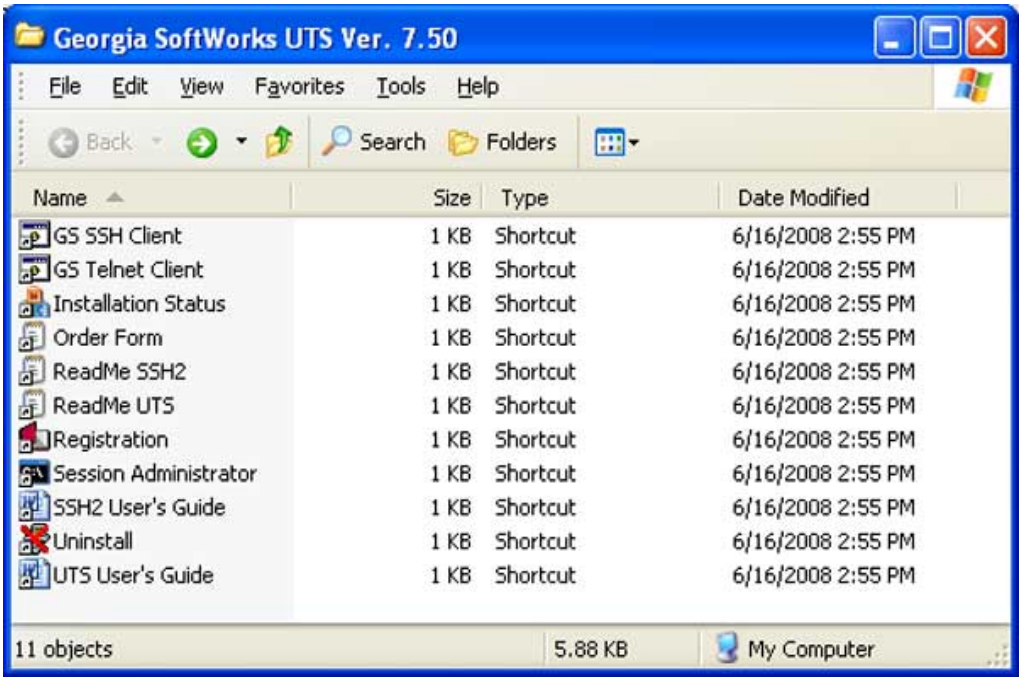

Georgia SoftWorks UTS Ver. 7.50
File Edit View Favorites Tools Help
Back Search Folders
Name Size Type Date Modified
GS SSH Client 1 KB Shortcut 6/16/2008 2:55 PM
GS Telnet Client 1 KB Shortcut 6/16/2008 2:55 PM
Installation Status 1 KB Shortcut 6/16/2008 2:55 PM
Order Form 1 KB Shortcut 6/16/2008 2:55 PM
ReadMe SSH2 1 KB Shortcut 6/16/2008 2:55 PM
ReadMe UTS 1 KB Shortcut 6/16/2008 2:55 PM
Registration 1 KB Shortcut 6/16/2008 2:55 PM
Session Administrator 1 KB Shortcut 6/16/2008 2:55 PM
SSH2 User's Guide 1 KB Shortcut 6/16/2008 2:55 PM
Uninstall 1 KB Shortcut 6/16/2008 2:55 PM
UTS User's Guide 1 KB Shortcut 6/16/2008 2:55 PM
11 objects 5.88 KB My Computer

Figure 10: UTS Program Group

The items in the shortcuts in the Program Group are:

- GS SSH Client – This is the Desktop GSW SSH2 Client. Use if the GSW SSH2 Server is installed
- GS Telnet Client – This is the Desktop GSW Telnet Client. Use if the GSW Telnet Server is installed
- Installation Status – This displays the GSW UTS version, the service status and if the GSW SSH2 Server is installed. The version and service status is also displayed for the GSW SSH2 Server.
- Order Form – Use this to fax an order to Georgia SoftWorks. Print this form and fax it to GSW.
- ReadMe SSH/ReadMe UTS – ASCII text file containing current release notes and other late breaking important information for both the GSW UTS and SSH2 Servers.
- Registration – Registration utility used to permanently activate the GSW UTS software.
- Session Administrator – Powerful tool for monitoring/shadowing sessions, broadcasting and more.
- Uninstall – Used to remove the GSW UTS
- SSH2 and UTS Users Guide – The complete User Guide in MS Word format for the UTS and SSH2.

You can view the GSW Software Installation Status.

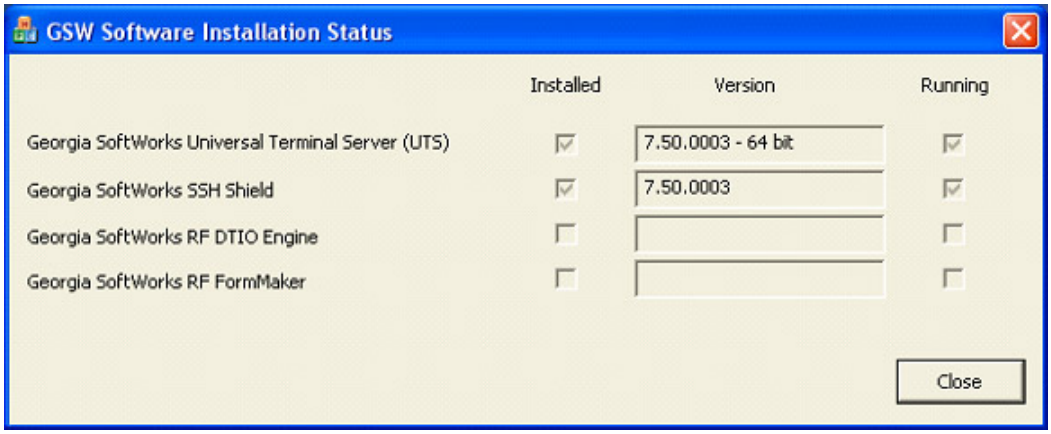


Figure 11: GSW Software Installation Status

This information indicates that the GSW UTS is installed and running. The version is also displayed and will indicate if the 64-bit edition is installed. The GSW SSH2 Shield is also installed.

The installation status also indicates that the Georgia SoftWorks RF Directed Terminal Input/Output (DTIO) Engine is not installed. This item will only be checked as installed and running if it was purchased and installed. GSW RF DTIO boosts performance and can increase the number of sessions that an application can handle in many environments. Please visit GSW website for more information on the RF DTIO Engine.

Registration

Note: If you are performing a fresh install of the 30-day trial copy, you **do not need to register** the software. Skip the registration steps.

Note: Do not use Windows Terminal Server to perform registration.

Two options exist for registering the license for the GSW UTS Server software. The first option is a Floating License (hardware key) that can be installed on a USB or Parallel port on the server. The registration instructions for the Floating license are below. The second option is a software method that is emailed, faxed or communicated over the telephone. Instructions for the software registration are on page 21.

Floating License – (Hardware Key)

Georgia SoftWorks offers an *optional* Floating License for customers that require the flexibility to rapidly move the telnet server from one machine to another. *If you did not purchase the Floating License - skip this section and go to the machine specific license on page 21.*

With the Floating License No registration is required for the telnet server to operate.

Common scenarios where the Floating License is useful include:

- **Laboratory usage in a development or test environment** where the telnet server is required for short periods of time on any particular machine and then moved to a new machine.
- **Backup Servers in a production environment**. Typically additional telnet servers are purchased for backup systems. However with a Floating License the Hardware Key can be quickly moved from the primary machine to the backup without any other registration requirements.
- **Environments where a failed server must be replaced or rebuilt and immediately restored to operation with full telnet capability**.

The Georgia SoftWorks floating license is a hardware key that can be ordered for a USB Port or a Parallel port.

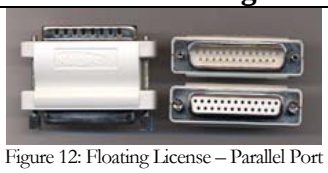
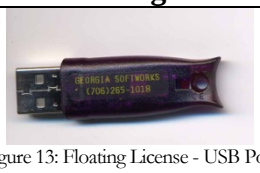
Parallel Port Floating License	USB Floating License
 Figure 12: Floating License – Parallel Port	 Figure 13: Floating License - USB Port
The Parallel Port Floating License is a Pass Through allowing normal function of the port.	Not attached to a Server
The Parallel Port Floating License connects to a female parallel port on the server and does not impact functionality of the port for other uses. It acts pass though allowing normal connections to the other side of the key.	USB LED Lights when Installed

Table 1 - Floating Licenses - Parallel and USB Ports

The SSH2/Telnet server will recognize the presence of the key and activate the software for the correct number of sessions and the proper date for which free version upgrades can be obtained. It does not matter which parallel or USB port on the server the Hardware Key is installed, as all ports will be scanned for the installation of the key.

The Floating License currently is installed using the manufacturer (Aladdin) of the hardware key's setup program. It is described below. The name of the hardware key is HASP4 and you will see it displayed in the setup screens. The best drivers for the HASP4 are the HASP HL drivers.

Note: If you are using a *USB Floating License on a Windows NT system* run the file `aksnt4usb.exe` prior to the following steps.

1. Copy the files from the Floating License folder (hardkey) on the provided CD to the hard drive on your server.

2. Run the HASPUserSetup`.exe` program and follow the installation instructions. After installation of the hardware key install the GSW Telnet Server as described on page 8 (if it is not already installed). See the GSW SSH2 Server User Manual for installation instructions of the GSW SSH2 Server.

3. You will first see the Aladdin Splash Screen. The Aladdin Splash Screen will display for about 5 seconds.

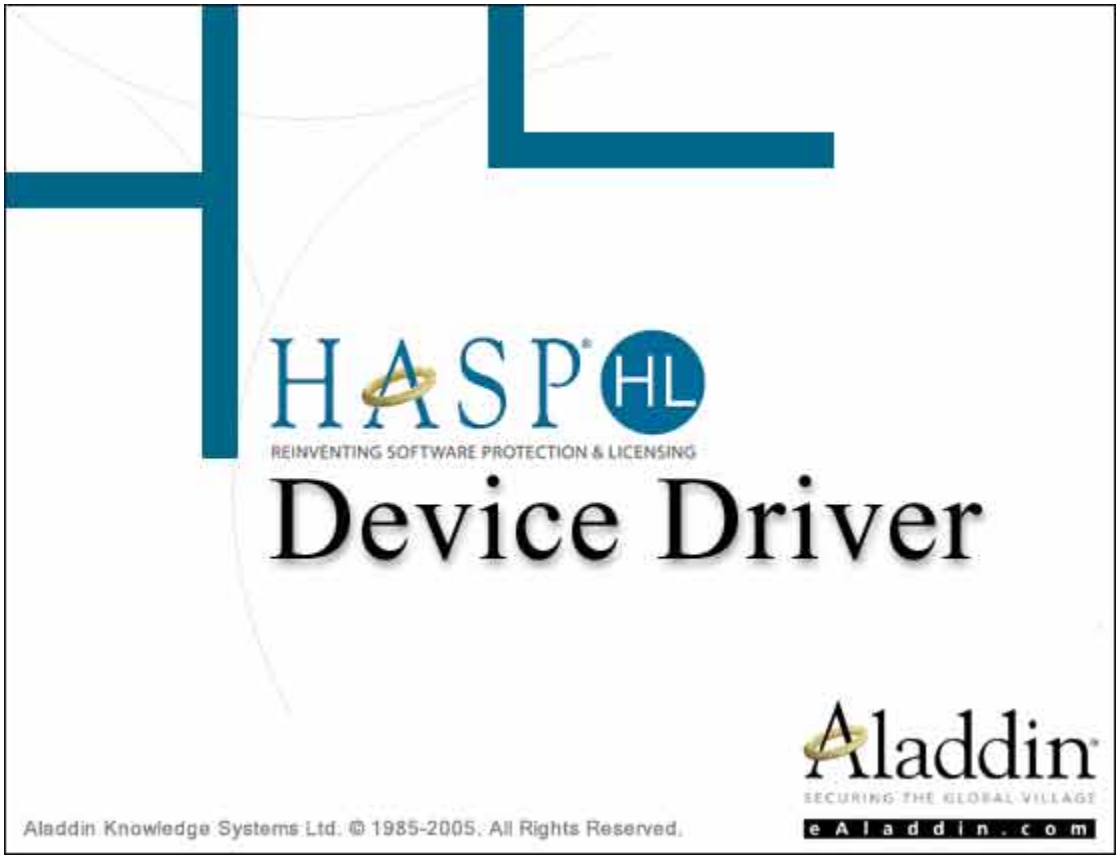


Figure 14: Floating License – HW Key Initial Splash Screen

4. The next screen displayed is the Aladdin Welcome Screen.

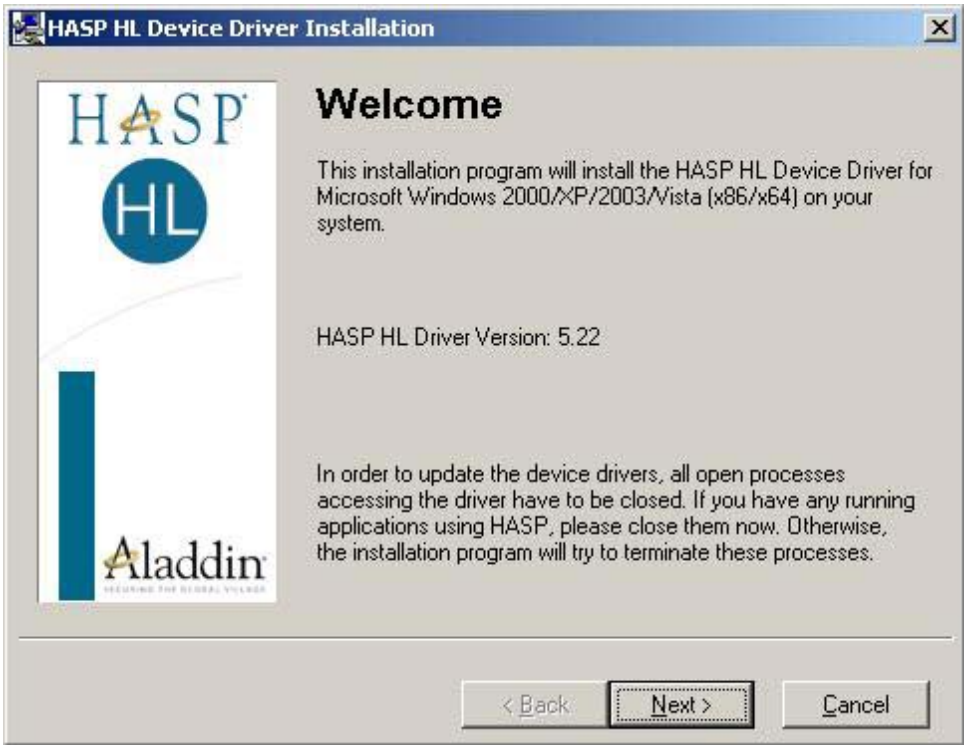

HASP HL Device Driver Installation
HASP
HL
Aladdin
Welcome
This installation program will install the HASP HL Device Driver for Microsoft Windows 2000/XP/2003/Vista (x86/x64) on your system.
HASP HL Driver Version: 5.22
In order to update the device drivers, all open processes accessing the driver have to be closed. If you have any running applications using HASP, please close them now. Otherwise, the installation program will try to terminate these processes.
< Back
Next >
Cancel

Figure 15: Floating License – Welcome Screen

As the dialog indicates, if you have any running application please close them now. **Click Next**.

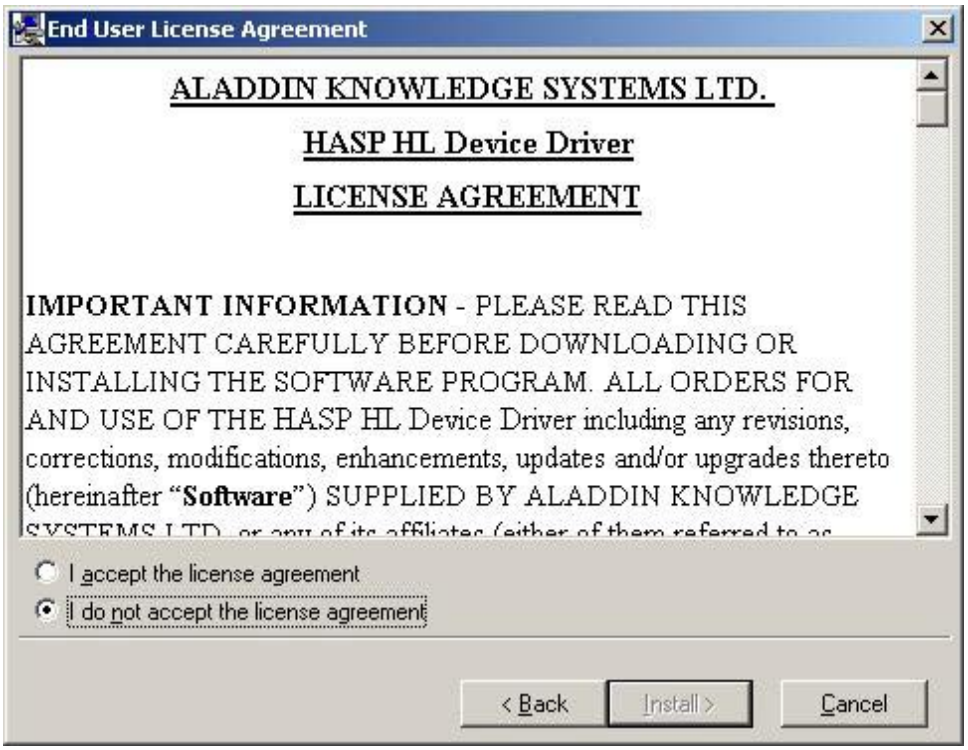

End User License Agreement
ALADDIN KNOWLEDGE SYSTEMS LTD.
HASP HL Device Driver
LICENSE AGREEMENT
IMPORTANT INFORMATION - PLEASE READ THIS AGREEMENT CAREFULLY BEFORE DOWNLOADING OR INSTALLING THE SOFTWARE PROGRAM. ALL ORDERS FOR AND USE OF THE HASP HL Device Driver including any revisions, corrections, modifications, enhancements, updates and/or upgrades thereto (hereinafter "Software") SUPPLIED BY ALADDIN KNOWLEDGE
I accept the license agreement
I do not accept the license agreement
< Back
Install >
Cancel

Figure 16: Floating License - License Agreement

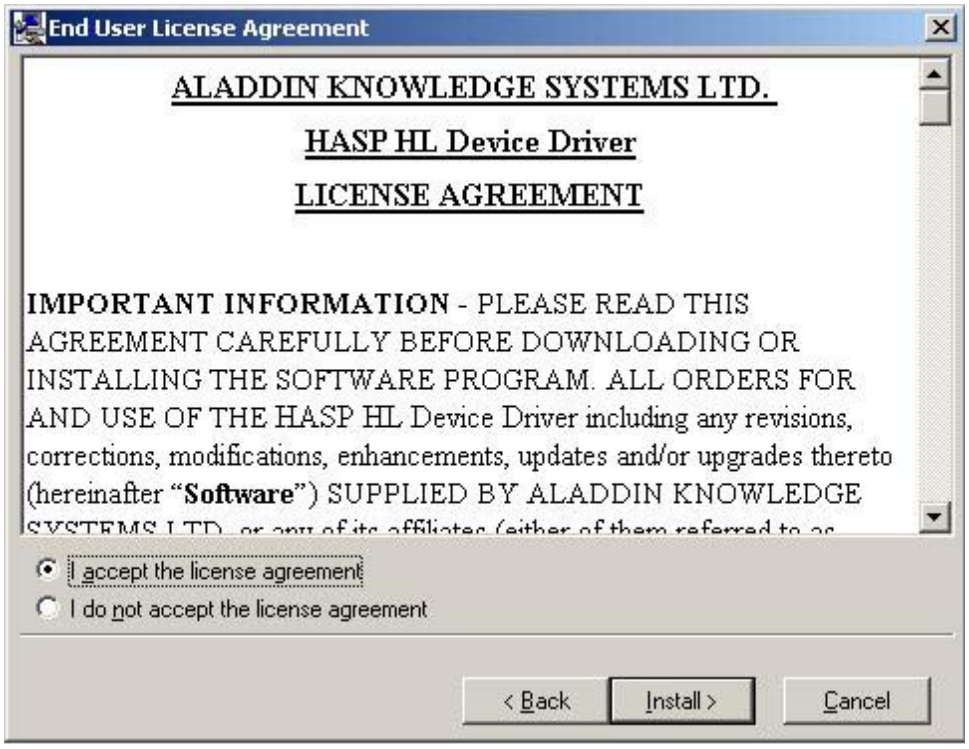

End User License Agreement
ALADDIN KNOWLEDGE SYSTEMS LTD.
HASP HL Device Driver
LICENSE AGREEMENT
IMPORTANT INFORMATION - PLEASE READ THIS AGREEMENT CAREFULLY BEFORE DOWNLOADING OR INSTALLING THE SOFTWARE PROGRAM. ALL ORDERS FOR AND USE OF THE HASP HL Device Driver including any revisions, corrections, modifications, enhancements, updates and/or upgrades thereto (hereinafter "Software") SUPPLIED BY ALADDIN KNOWLEDGE
I accept the license agreement
I do not accept the license agreement
< Back
Install >
Cancel

Figure 17: Floating License - Accept License Agreement

Read the license agreement and select "I accept the license agreement", and then **Click Install**.

5. An installation status progress meter is quickly displayed and when the status gathered is completed the screen below is displayed.

Figure 18: Floating License - HW Key - Installation Status

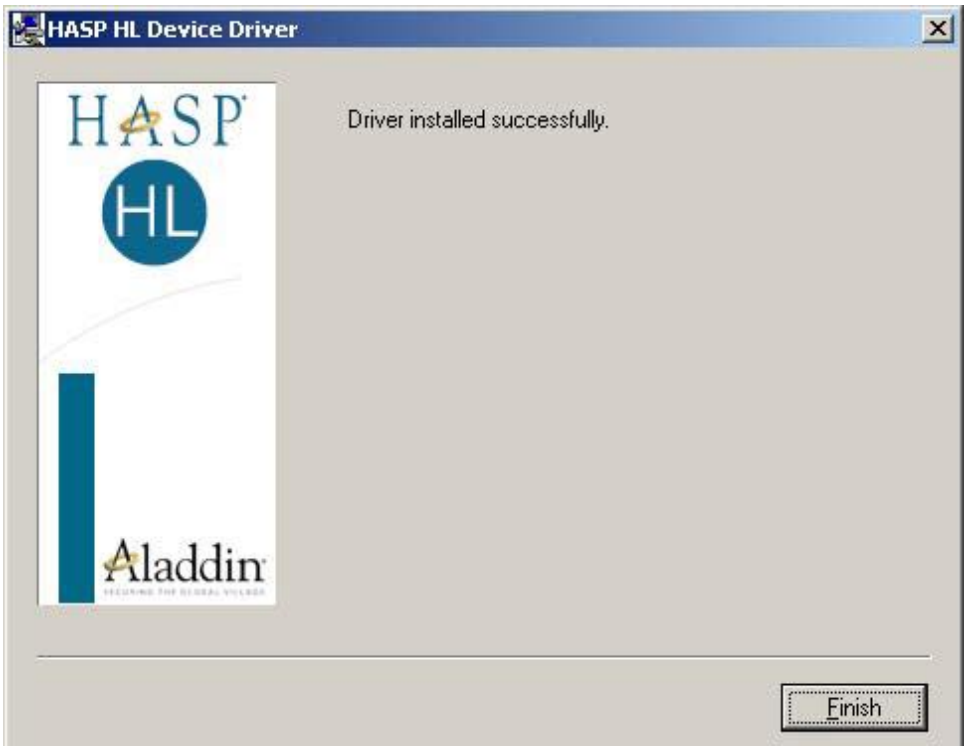


Figure 19: Floating License Drivers Successful Installation

6. When the installation of the Aladdin Hasp Device driver is complete the screen below is displayed. **Click Finish**.

7. Plug the hardware key onto the parallel or USB port on the server.

   NOTE: On some systems you may have to reboot the server after installation. If the Floating License is not recognized (by the UTS server) after installing the driver, please reboot the server.

Uninstall Floating License – (Hardware Key)

In the event that you need to uninstall the Floating License (Aladdin HaspHL) please use the Windows Control Panel Add/Remove Programs administrative utilities.

NOTE: Removing or uninstalling the Floating License will disable the GSW UTS Server.

Software Registration

To run the Georgia SoftWorks UTS Server for Windows NT/XP/VISTA/2000/2003/2008 you must first register the software. (*This registration is **NOT** required if you purchased the Floating License. Page 14*) This entails just a few steps that involve obtaining the Product ID and providing this Identification to Georgia SoftWorks so a **Serial Number** can be generated. - **NOTE:** Read System Signature chapter at the end of manual.

How to Register the Software

To run the registration software either -

1. Click on the Registration Shortcut in the GSW UTS program group **OR**

2. Select the *Start* button on the task bar, select *Programs*, then *Georgia SoftWorks UTS* and then *Registration*.

The registration screen is displayed. The Registration software automatically fills in the Product Information fields as show in Figure 20. Complete the Customer Information fields as shown in Figure 21.

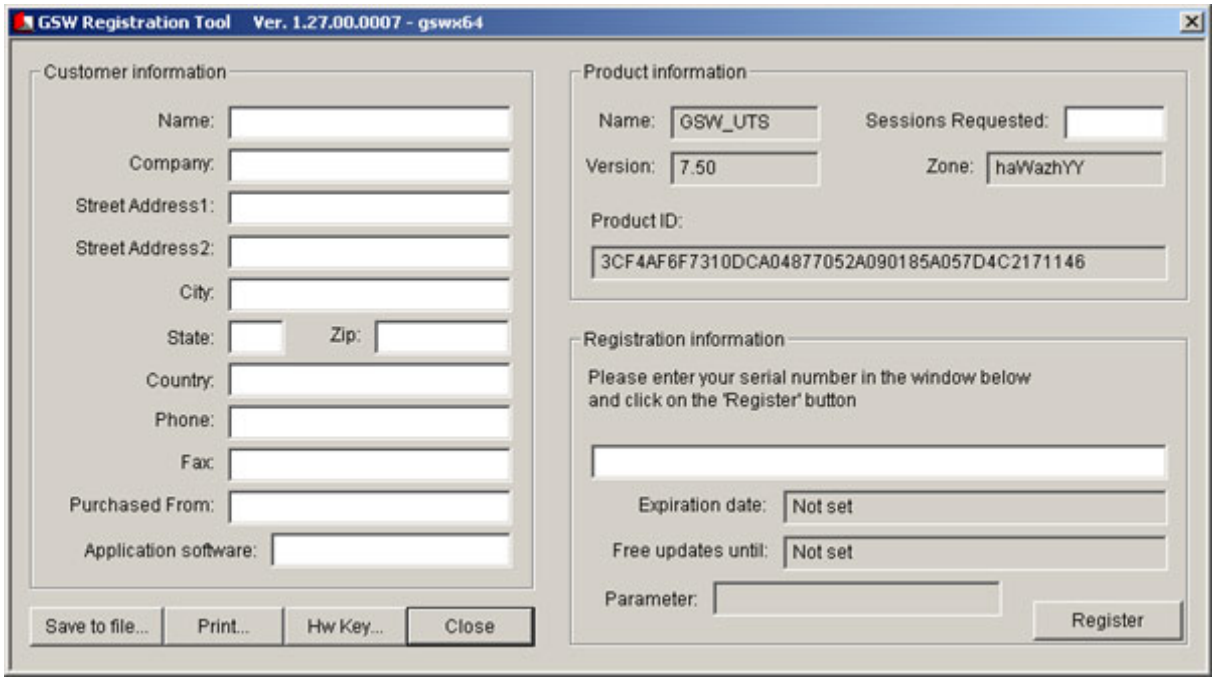


Figure 20: Registration: Initial Screen

Please complete the *Customer Information*, the *Purchased From* and the *Sessions Requested* fields in the Registration Screen. Enter the name of the software that will be your primary application to use with Telnet/SSH2 in the *Application software* field. Examples could be SAP, QAD, Catalyst, System Administration, etc.

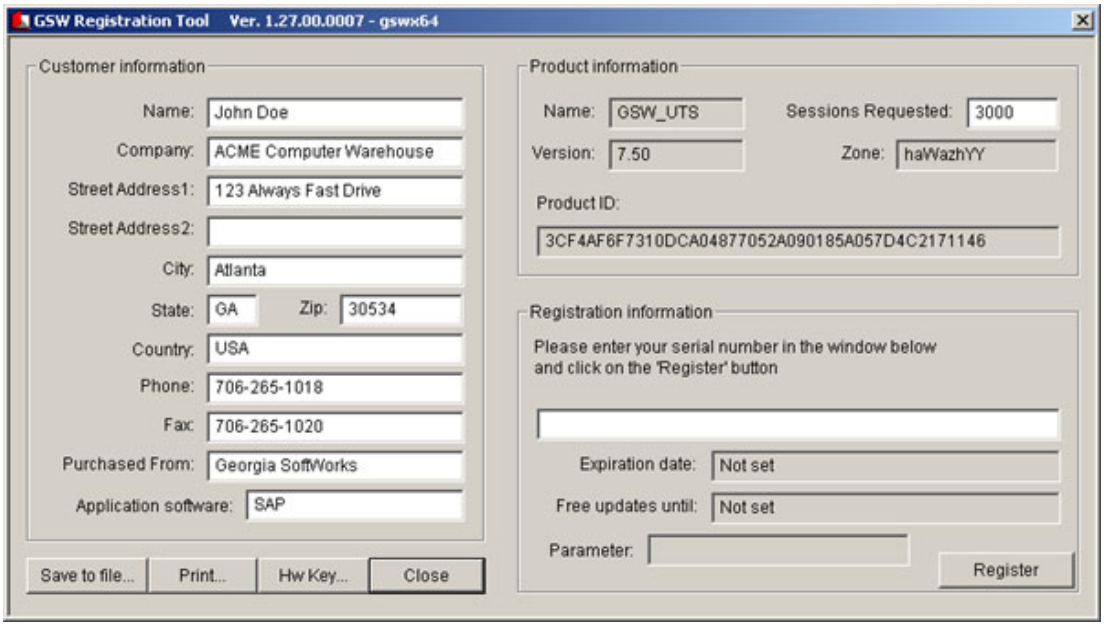


Figure 21: Registration: Customer Information Entry

1. The registration information must be provided to Georgia SoftWorks to obtain the Serial Number. Several methods are available for your convenience.

    a. Save the information to a file and email it to Georgia SoftWorks - *Preferred method.*

    OR

    b. Print the information and Fax it to Georgia SoftWorks

2. Please save (using the **Save to file** button on the registration screen) this information to a file and email to Georgia SoftWorks registration@georgiasoftworks.com

    OR

    Please print (using the **Print** button on the registration screen) this information and fax to Georgia SoftWorks - 706.265.1020

Once Georgia SoftWorks receives the information, we can generate a Serial Number on demand. We will reply back via Fax or email. You may close the registration program at this time.

3. When the Serial Number is provided Run the Registration Program again and enter the Serial Number. The easiest method to get the serial number is to highlight the returned Serial Number and copy (ctrl-c). Then position the mouse in the Serial Number field in the Registration Information box and paste (ctrl-v).

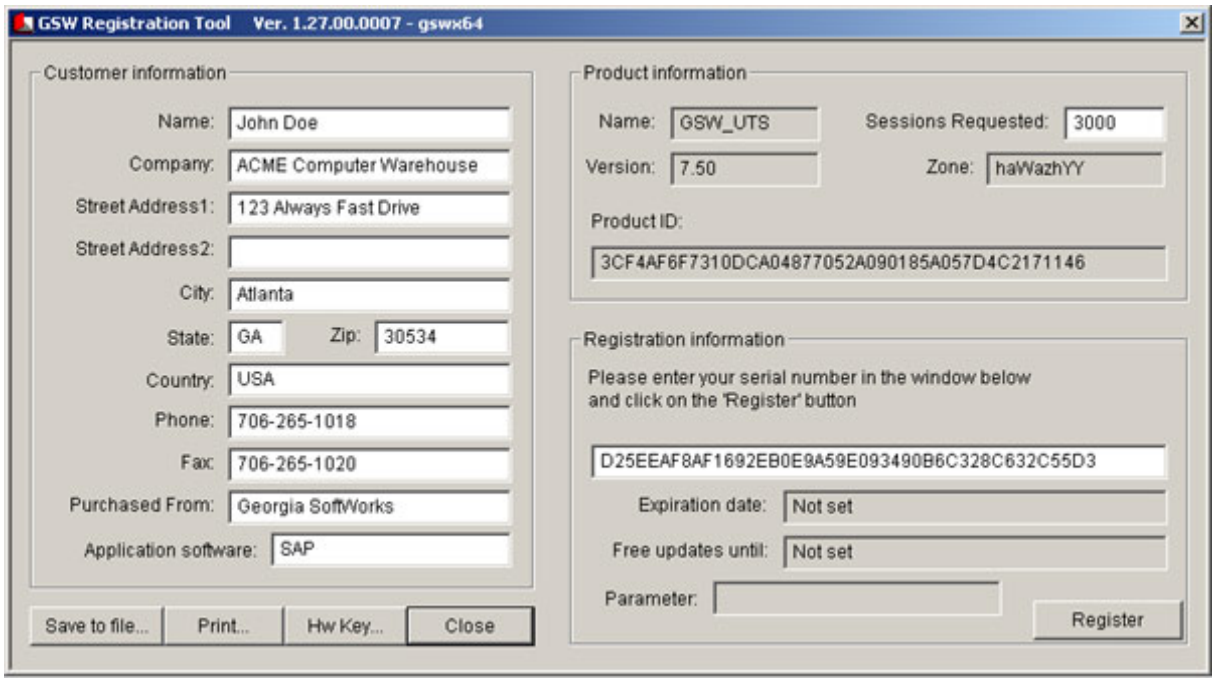


Figure 22: Registration - Serial Number Entered

4. **Click Register.**

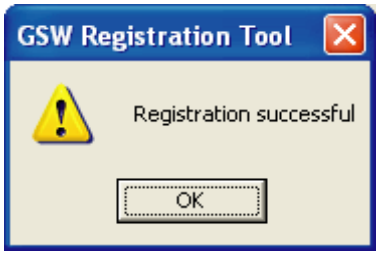


Figure 23: Registration Successful

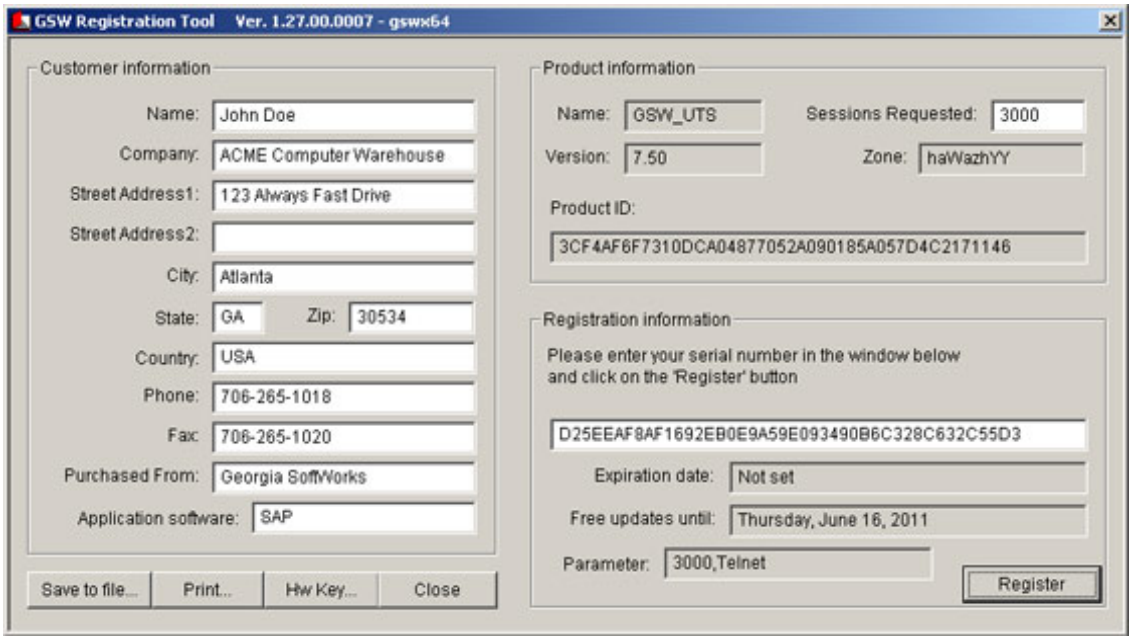


Figure 24: Registration: Complete

Now the software is registered. You may now run the Georgia SoftWorks Windows NT/XP/VISTA/2000/2003/2008 Telnet Server. Note that you will be able to obtain Free Updates until the date specified.

IMPORTANT: READ SYSTEM SIGNATURE CHAPTER AT END OF MANUAL (PAGE 255).

GSW UTS CLIENTS

In addition to the GSW UTS clients the Georgia SoftWorks UTS Server is compatible with all Telnet or SSH2 compliant third party clients.

All the powerful and popular GSW Client options and features described in the GSW UTS are available both for the GSW Telnet Server and GSW SSH2 Server except where specifically noted. Georgia SoftWorks offers Telnet/SSH2 Clients for the following platforms:

Operating System	GSW Telnet Client	GSW SSH2 Client	Client Type
Window 98/ME	Yes	Yes	**GSW DESK TOP CLIENT**
Windows NT 4.0	Yes	Yes	
Windows 2000	Yes	Yes	
Windows XP	Yes	Yes	
Windows 2003	Yes	Yes	
Windows Vista	Yes	Yes	
			GSW Mobile Pocket PC Device Clients
Windows CE .NET 4.2/5.0	Yes	Yes	GSW Windows CE .NET 4.2/5.0 Client
Pocket PC 2002	Yes	No	GSW PPC2002 Client
Pocket PC 2003	Yes	Yes	GSW PPC2003 Client
Windows Mobile 2003/2005	Yes	Yes	GSW PPC2003 Client
LXE MX3X Teklogix 7535 devices Teklogix 8525 Symbol MC9060G Intermec CK30, CV60 (All of these devices when Running Windows CE .NET 4.2/5.0)	Yes	Yes	GSW Windows CE .NET 4.2/5.0 Clients
			GSW Java Clients
Java Client	Yes	No	
Java Applet	Yes	No	

Table 2 - GSW SSH2 Client Platforms

Both the SSH2 and the Telnet Clients are included with the Georgia SoftWorks UTS. Please note that only the clients appropriate for the server purchased will be able to connect. In other words, if you have a Telnet Server, only GSW Telnet and compliant third party clients will connect. If you have the GSW SSH2 Server only GSW SSH2 and compliant third party clients will be able to connect.

NOTE: SSH2 Clients can NOT connect to the Telnet Server and Telnet Clients cannot connect to the SSH2 Server.

GSW Clients and Operating Systems Diagram

The following diagram may be helpful in visualizing the GSW Client to use with various Windows Operating Systems.

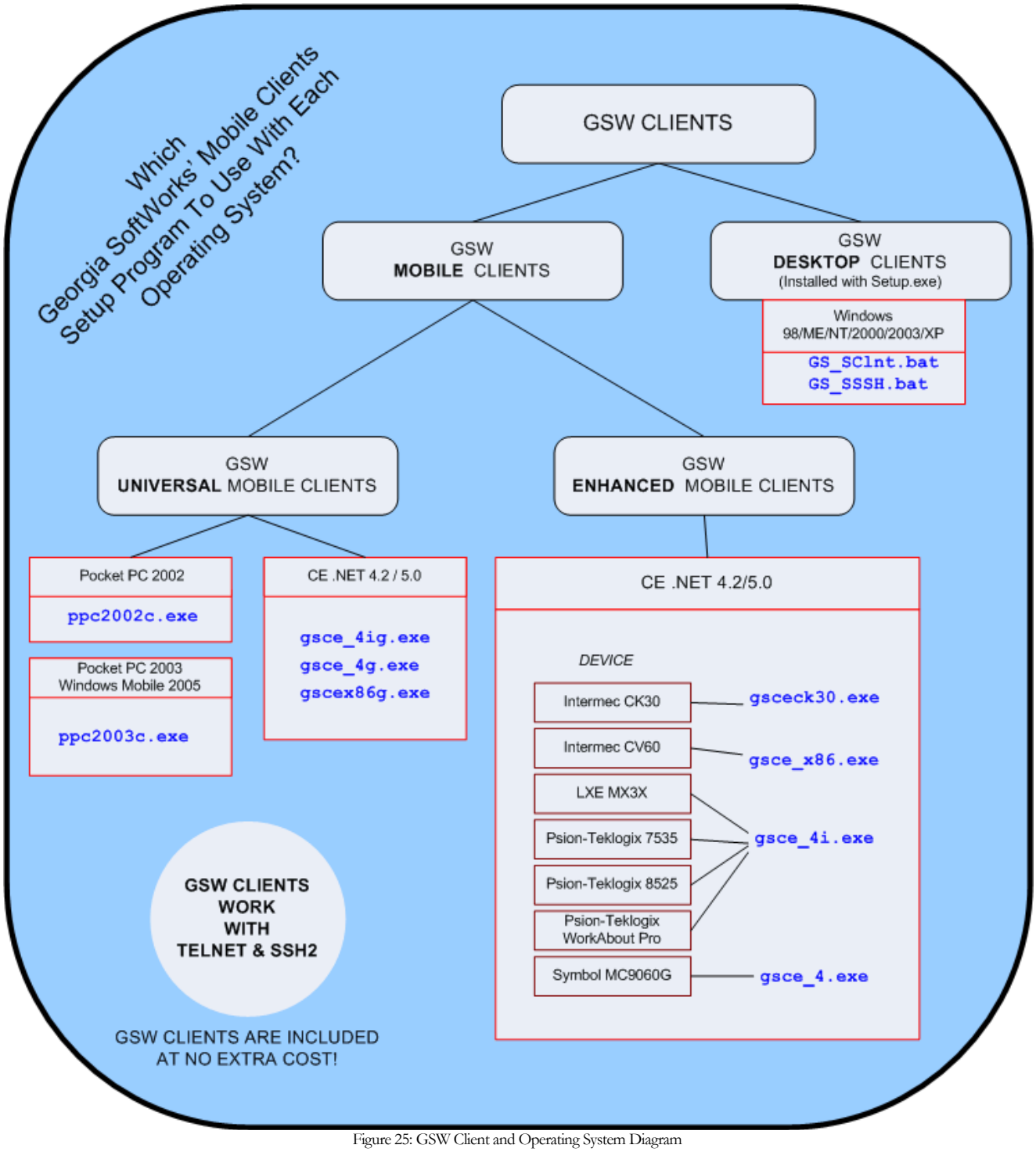


Figure 25: GSW Client and Operating System Diagram

GSW Desktop Clients

Installation Steps

This is how you install the client software.

Installation of the Client software is simple. Run the setup.exe program. From Windows 95/98 or Windows NT/XP/VISTA /2000/2003 perform the following:

Run the setup.exe program.

1. The Welcome screen of the setup program is displayed and you are reminded and urged to exit all Windows programs before continuing. The setup program recognizes if it is a Windows NT/XP/VISTA/2000/2003/2008 system and prompts you for either a *Full Install* or a *Client Only* install. If this is a Windows NT/XP/VISTA/2000/2003/2008 system then select **Client Only** using the Radio Buttons. If this is a Windows 95/98 system then you are prompted for installation of the Georgia SoftWorks Windows NT/XP/VISTA/2000/2003/2008 Client. Click **Continue**.

2. A screen is displayed indicating the directory that the Georgia SoftWorks Windows NT/XP/VISTA/2000/2003/2008 UTS Client will be installed. The default is `C:\gs_uts`. You may change the installation directory at this time. Click **Continue**.

4. The Setup Succeeded is displayed.

5. A "Program Group" is created. It contains two shortcuts, the Georgia SoftWorks Telnet and SSH2 Client.

UN-Install

To uninstall the Georgia SoftWorks Windows NT/XP/VISTA/2000/2003/2008 Software follow these instructions.

1. Click the **Start** button on the Windows NT/XP/VISTA/2000/2003/2008 Task bar - go to **Programs**

2. Find the Georgia SoftWorks line - To the right select **uninstall** and follow the instructions. To reinstall the software you will need to re-register the software.

GSW Mobile Clients

Georgia SoftWorks provides mobile clients for PPC 2002, PPC 2003 and Windows CE .NET 4.2/5.0 class devices. As with the GSW desktop clients, the GSW Mobile Clients are no extra cost, which can amount to a substantial savings. GSW Mobile Clients are categorized into Universal Mobile Clients and Enhanced Mobile Clients. An overview of each follows.

GSW Universal Mobile Clients Overview

GSW Universal Mobile Clients eliminate the need for operation verification for specific devices by GSW. The Universal Mobile Client can simply be installed by the customer. This opens a broad range of compatible devices while maintaining the rich feature set provided by GSW Mobile Clients.

Universal Mobile Clients for Windows CE .NET 4.2/5.0

The GSW Universal Mobile Clients for Windows CE .NET 4.2/5.0 are designed to be compatible with all Windows CE .NET 4.2/5.0 systems running on ARMv4, ARMv4i and x86 based devices. Each device type requires a particular Universal Mobile Client. The Mobile Client and the location of its setup program are identified in the table on page 29.

GSW Universal Mobile Clients for Windows Pocket PC and Windows Mobile 2003/2005

The GSW Universal Mobile Clients for Pocket PC 2002 and Pocket PC 2003 are designed to be compatible with all Pocket PC and Windows Mobile systems running on ARMv4 based devices. The Windows Pocket PC and Windows Mobile devices that are based on the ARMv4 architecture each require a particular Mobile Client. The Mobile Client and the location of its setup program are identified in the table on page 29 .

In some cases for particular devices there may be features available that may not be obvious. When appropriate we have provided special instructions on how to take advantage of those features. Additionally there may be devices that have been verified for correct operation. Please review page 32 to see if your particular device has special instructions, tips or has been officially qualified.

In many mission critical environments operation verification by GSW may be a requirement. If your company would like operation verification please contact us at sales@georgiasoftworks.com or call 706.265.1018 for more information.

GSW Enhanced Mobile Clients for Windows CE .NET 4.2/5.0 Overview

In addition to the Universal GSW Mobile Clients, specialized or *Enhanced Clients* are available for many devices that take advantage of **device specific** features. Device specific features range from special key and light operation to application locking features. Each Enhanced Mobile Client has a *Tips* section that should be reviewed. To determine if your device has Enhanced Mobile Client please see the table on page 31.

GSW Enhanced Mobile Clients with verified operation on Windows CE .NET 4.2/5.0 devices include the Intermec CK30, CV60, LXE MX3X, Symbol MC 9060G, Psion-Teklogix 7535, Psion-Teklogix 8525, Psion-Teklogix WORKABOUT Pro. Other CE .NET V4.2/5.0 based devices may be compatible but have not been certified as of this writing.

If you have a device that has unique capabilities and would like custom client features please contact us at sales@georgiasoftworks.com or call 706.265.1018 for more information.

Select the correct GSW Mobile Client

- If your device is a PPC 2002 then use the GSW mobile client setup program `ppc2002c.exe`
- If your device is a PPC 2003 then use the GSW mobile client setup program `ppc2003c.exe`
- If your device is running Windows CE .NET 4.2/5.0, look at the table on page 31 to determine if an Enhanced GSW Mobile Client is available. If so then use the GSW Enhanced Mobile Client Setup Program Identified in the table and be sure to look to see if any *Tips* are available for that client.
- If your device is running Windows CE .NET 4.2 and an Enhanced GSW Mobile Client is not available then you can use a Universal GSW Mobile Client.
    - If your device type is ARMv4i then use `gsce_4ig.exe`
    - If your device type is ARMv4 then use `gsce_4g.exe`
    - If your device type is X86 then use `gscex86g.exe`
    - If you do not know the device type then
        - First - Try the `gsce_4ig.exe` client, if that does not work - then
        - Next – Use the `gsce_4g.exe` client, if that does not work - then
        - Last – Use the `gscex86g.exe` client

	GSW Mobile Client Installation Programs		
	GSW mobile clients are located in a subfolder on the CD or where the download was unzipped with one of the following names		
	GSW Universal Mobile Clients		
	Operating System	Device Type	**GSW Client Setup Program location / name**
	Windows CE .NET 4.2/5.0	ARMv4	`/clients/gsce_4g/gsce_4g.exe`
		ARMv4i	`/clients/gsce_4ig/gsce_4ig.exe`
		X86	`/clients/gsce_x86/gscex86g.exe`
	PPC 2002	ARMv4	`/clients/ppc2002/ppc2002c.exe`
	PPC 2003	ARMv4	`/clients/ppc2003/ppc2003c.exe`
	Windows Mobile 2003/2005	ARMv4	`/clients/ppc2003/ppc2003c.exe`
	GSW Enhanced Mobile Clients for Windows CE .NET 4.2/5.0 Devices		
	Operating System	Device Type	**GSW Client Setup Program location / name**
	Windows CE .NET 4.2/5.0	ARMv4	`/clients/gsce_4/gsce_4.exe`
		ARMv4i	`/clients/gsce_4i/gsce_4i.exe`
		ARMv4i	`/clients/gsce_4i/gsceck30.exe`
		X86	`/clients/gsce_x86/gsce_x86.exe`
	NOTE: See the table (page 31) for Enhanced Mobile Clients to determine if your devices can use one of the above clients.		

Table 3 - GSW Mobile Client Setup Program Locations

Installation steps

1. Install current version of the Georgia SoftWorks UTS Server (Version 6.50 or higher)
2. Determine the location and name of the GSW Mobile Client Setup program for your device. See page 29.
3. Copy the appropriate setup executable to the computer which established partnership with your device.
4. Turn on your device
5. Start the Active Sync on the device and connect.
6. Run the self-extracting executable on the computer selected in Step 3
7. Confirm the prompts asking to continue with the installation.
8. You should see the setup program launched on your device.
9. Press the OK button on the device to complete the installation.

Please review any Tips for your device in the next section.

Enhanced GSW Mobile Clients List

GSW has Enhanced Mobile Clients for the following devices that take advantage of unique features on the listed devices. **Be sure to review the Tips section for each device**.

Enhanced GSW Mobile Client Names for Windows CE .NET V4.2/5.0 Devices			
	Device Model	**Device Type**	**GSW Client**
	Intermec CK30 *Tips for CK30 Devices on page 47*	ARMv4i	`gsceck30.exe`
	Intermec CV60 *Tips for CV60 Devices on page 49*	X86	`gsce_x86.exe`
	LXE MX3X *Tips for LXE MX3X Devices on page 52*	ARMv4i	`gsce_4i.exe`
	Psion-Teklogix 7535 *Tips for Psion-Teklogix 7535 on page 50*	ARMv4i	`gsce_4i.exe`
	Psion-Teklogix 8525 *Tips for Psion-Teklogix 8525 on page 50*	ARMv4i	`gsce_4i.exe`
	Psion-Teklogix WORKABOUT Pro *Tips for Psion-Teklogix WORKABOUT PRO on page 50*	ARMv4i	`gsce_4i.exe`
	Symbol MC 9060G *Tips for SYMBOL MC 9060G devices on page 51*	ARMv4	`gsce_4.exe`

Table 4 - Enhanced GSW Mobile Clients

Universal GSW Mobile Clients Special Tips or Qualifications List

The GSW Universal Mobile Clients operate on ARMV4, ARMV4I and X86 devices. In some cases special instructions or tips may exist to take advantage of unique features or provide ease of use pointers for that particular device. If there are *special tips* or a *particular device has been verified for correct operation* then it will be listed in the table below.

Devices Qualified with Universal GSW Mobile Client for CE .NET V4.2			
	Device Model	**Device Type**	**GSW Client**
	PSC Falcon 4410 Tips for PSC Falcon 4410 *on page 54*	ARMv4i	`Gsce_4ig.exe`

Table 5 - Devices qualified with Universal GSW Mobile Clients

If your device is not in the list above and it is an ARMv4, ARMv4i or X86 devices, it is likely that a Universal GSW Mobile Client will operate. Please use the steps in section above (page 29) to determine the correct mobile client.

Extended Features for Windows CE .NET 4.2/5.0 Devices

In order to facilitate the varied commercial requirements GSW has provided extended features for the GSW Mobile Clients for Windows CE .NET 4.2/5.0. These additional features offer useful flexibility and efficiency for both the device user and the System Administrator. The table below provides a brief description of the features. The details on configuration and enabling the options follow.

	Mobile Feature Name	Brief Description
1	Stay Connected	Automatically attempts to reconnect when a session becomes disconnected
2	Allow Suspend	Power Saving Feature
3	Beep Sound	Correct Operation of Beep Sound
4	Menu Accelerators / Shortcuts	Function keys provide quick access to common menu commands
5	Free Function Keys	Function Keys, F1-F12 are freed (released) from operating system control and are available for the application.
6	Raster Font Selection	Additional Raster fonts available - `9x16,10x12,10x13,12x16`
7	Simplified Chinese font	GSW Mobile Clients support Simplified Chinese Font GB (True Type)
8	Select Configuration	Several configurations are allowed. This provides a quick way to select the desired configuration.
9	Portable Session Configuration	File format for Session Configuration allows easy cloning of sessions
10	Last Active Session Memory	After a restart the client returns to the last active session
11	No Scrollbars option	Save Space on Screen. Especially useful on devices with small screens. Also supported on Pocket PC 2003 devices
12	Automatic Logon	Automatically logon without Host, Domain, Username, Password prompting.
13	Keyboard Marcos	Remap Function and Special Keys to send a sequence of characters.
14	Configuration and Application Persistence	Save Mobile Client Configuration Across Reboots • Allows for ease of configuration deployment to multiple devices

Table 6 - GSW Mobile CE .NET 4.2/5.0 Client Extended Features

Stay Connected

Automatically attempts to reconnect as soon as a session is disconnected. Operates as if the connect button was pressed.

Stay Connected is enabled by selecting the option `Stay Connected`.

```
Session|Settings|Session|Stay connected
```

To break out of the automatic connection loop press

```
ctrl-shift-b
```

Allow Suspend – Power Saving Feature

To facilitate the fastest possible operation, the default GSW Mobile Client operation disables mechanisms that allow the device to suspend. There may be scenarios that require the device to Suspend. You can configure the GSW Mobile Client Software to allow the device to Suspend by setting the option `Allow Suspend`

```
Session|Settings|Session|Allow suspend
```

Beep sound – Correct Operation

No configuration is required.

Menu Accelerators / Shortcuts

As of this writing the Intermec CK30 does not provide mouse/stylus capability. In order to provide a more convenient method of configuration for the administration the following accelerator keys are available.

Note: The following Accelerators are available for all CE .Net 4.2 devices.

```
F2 – Save Session Settings

F5 – File|Session Configurations …

F6 – Session|Connect

F7 – Session|Settings

F8 – File|Exit
```

Simplified Chinese Font Support

The GSW SSH2/Telnet mobile clients support Simplified Chinese fonts. Follow the steps below to setup the GSW mobile client:

1. GSW Universal Terminal Server and GSW Mobile Clients must be V7.51 or higher.
2. Install the Simplified Chinese font GB (**True Type**) on the mobile device.
3. Open the GSW SSH2/Telnet client on the mobile device and navigate to:
   Sessions -> Settings
   Select the Font tab and select the `GB` font.

The Simplified Chinese font does not have to be installed on the Universal Terminal Server. **Note**: The GB font will not display in the GSW **Desktop** SSH2/Telnet client or Session Administrator. GSW engineering has verified correct operation with the GB (True Type) font.

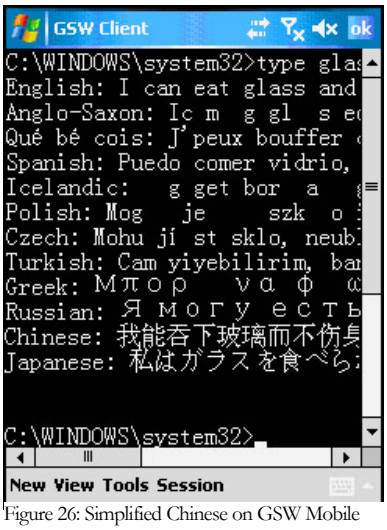


Figure 26: Simplified Chinese on GSW Mobile Client

Select Configuration for Session

You can create and save a number of Session Configurations settings that you can use as needed. The Select Configuration option displays the saved Session Configurations that reside in the same folder as the GSW Mobile client software. This folder may vary from device to device so please see the tips section (in this users guide) for your specific device to determine its location. Put another way, Session Configurations are not displayed if they do not reside in the same folder that the GSW Mobile Client software resides.

You select the desired Session Configuration by using the associated function key. Display the Select Session Configuration by using the menu bar.

File | Select Configuration …

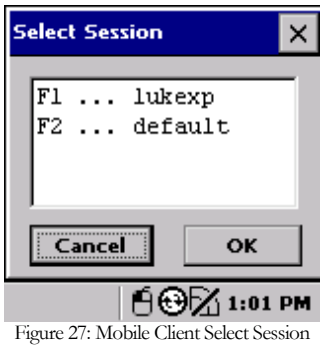


Figure 27: Mobile Client Select Session

Portable Session Configuration – A Real Time Saver!

The file format of the Session Configuration is such that it can be used to clone or duplicate the session configuration on other devices. Session device settings are kept completely in files with no external references. This provides a portable configuration file that can be used when setting up other devices. This can be a significant time saver when 40, 100 or more devices are being set up.

The configuration files have the gswtc extension. The file has an "ini" format with Username, Host, etc.

See also the section on application persistence capabilities to view the usefulness of the GSW automatically created CAB files when deploying GSW Mobile Clients (page 41).

Last Active Session Memory

After a restart the client returns to the last active session. This works if default .gswtc is not present (otherwise default .gswtc is loaded).

No Scrollbars Option

Set this option to eliminate the use of scroll bars to save screen space. The application should display itself in the top-left corner of the screen. For example, this is the position that SAPConsole assumes. Of course this assumes that the application does not require scroll bars.

Normally Scrollbars are enabled.

The No Scrollbars option is enabled by selecting the option `No scrollbars`.
`Session|Settings|Session|No scrollbars`

Check the "No scrollbars" box to eliminate scrollbars as shown below.

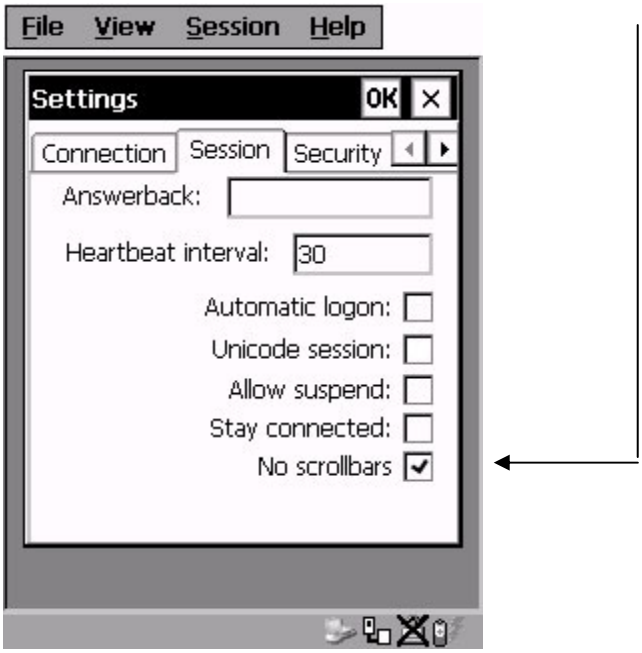


Figure 28: Mobile Client - No Scrollbars Option

Automatic Logon for Mobile Clients

Set this option to enable the GSW Mobile client for Automatic Logon. The GSW Server Side Automatic Logon configuration must also be completed (See page 96).

Critical Note 1: Make sure that Automatic Logon entries for GSW Mobile clients are made in the `gs_auto.txt` configuration file.

Critical Note 2: IP addresses configured for Automatic Logon for GSW Clients must NOT overlap with IP Addresses configured for Automatic Logon for 3rd party clients.

The Automatic Logon option is enabled by selecting the option Automatic logon.
`Session|Settings|Session|Automatic logon`

Check the "`Automatic logon`" box to enable the client for Automatic Logon as shown below.

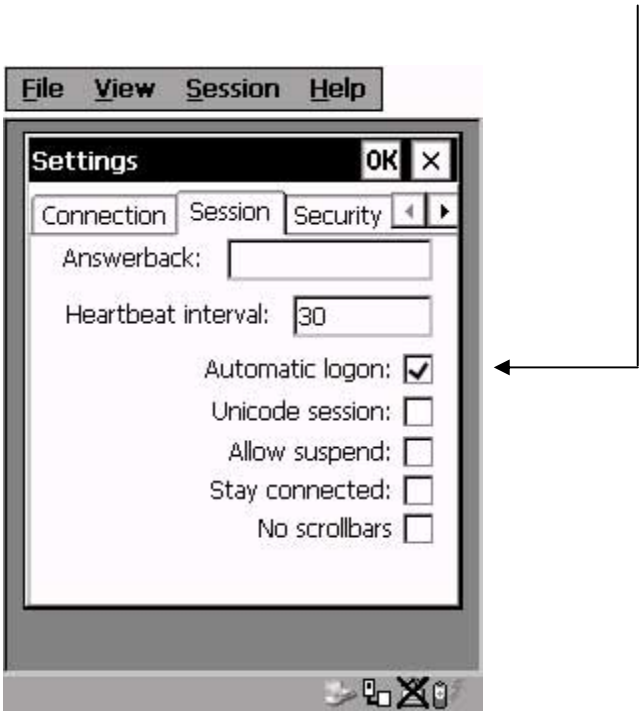


Figure 29: Mobile Client – Automatic Logon Option

Keyboard Macros

Keyboard macros are a powerful and time saving feature that lets the administrator define custom keys on the device when the session is active[4]. Macros are used for remapping Function keys (`F1 – F12`) to keystroke sequences. Macros definitions have the form

```
Function Key=Keystroke Sequence
```

Where

Function Key is F1 through `F12`

and

Keystroke Sequence follows the same format as the GSW Termination strings (page 110).

The keys that can be remapped are

Function Keys: `F1,F2,F3,F4,F5,F6,F7,F8,F9,F10,F11,F12`

Configuration

The keyboard macros are defined in the session configuration files. These have gswtc extensions. The configuration files have the "`Windows ini`" format. A new section [`Macros`] needs to be manually added to the configuration file.

For example, to remap all Functions Keys to send capital `F`, followed by function key index and the enter key you would add the following section to the configuration file on the device (usually `default.gswtc`).

```
[Macros]
F1=shift-f,1,ENTER
F2=shift-f,2,ENTER
F3=shift-f,3,ENTER
F4=shift-f,4,ENTER
F5=shift-f,5,ENTER
F6=shift-f,6,ENTER
F7=shift-f,7,ENTER
F8=shift-f,8,ENTER
F9=shift-f,9,ENTER
F10=shift-f,1,0,ENTER
F11=shift-f,1,1,ENTER
F12=shift-f,1,2,ENTER
```

[4] Keyboard Marco's are different than Keyboard Accelerators. Accelerators are available on the device when there is no session (outside the session).

Break-Out Sequence

Disconnects the session. There may be times when you want to disconnect the session. To disconnect the client from the server, enter the `Break-Out` sequence.

After the session is disconnected, further behavior on the session observes the rules configured on the server such as Graceful Termination, Session Saver, etc. The Break-Out is accomplished by entering the sequence

```
ctrl-shift-d
```

Note: Do not confuse this sequence which disconnects the session with the `Ctrl-Shift-b` sequence (see page 33)

Extended Features for Pocket PC 2003 and Windows Mobile 2003/2005 Devices

	Mobile Feature Name	Brief Description
1	Keyboard Marcos	Remap Function and Special Keys to send a sequence of characters.
2	Free Function Keys	Function Key's (F1-F12) are freed (released) from Operating System control and are available for the application.
3	Application Launch Bypass	Interoperation with application launch utilities such as Intermec's iLaunch.
4	Simplified Chinese font	GSW Mobile Clients support Simplified Chinese Font GB (True Type)

Table 7 - GSW Mobile PPC 2003 and Windows Mobile 2003/2005 Client Extended Features

Keyboard Macros

GSW has provided Keyboard Macros for the GSW Mobile Clients for Windows Pocket PC 2003 and Pocket PC 2005. They operate the same as described for the Windows CE .NET 4.2/5.0 mobile clients.

Free Function Keys

Allows Function keys F1-F12 to be used by the application. Windows Pocket PC, Mobile and CE .NET operating systems may take control of one or more of the function keys making them unavailable to the application software.
All GSW Mobile Clients (with the exception of PPC 2002) free the function keys from the operating system so they can be used by the application. To restore operating system control of the function keys, reboot the device.

Application Launch Bypass

GSW Telnet/SSH2 client for PPC2003 and Windows Mobile 5/6 may be configured so it will easily interoperate with application launch utilities like Intermec's iLaunch, such that the client will terminate immediately when the session ends. Additionally, if the feature is enabled the client will turn off all menu options except 'Disconnect'.

The configuration is performed by setting the value of a new parameter 'Bypass' that resides in the "cppc2003.ini" file in the section called 'Settings'

Possible Values are:

0 – disabled (default)
1 – enabled

If the Bypass parameter is not present in the file, then the default value used is: 0 (disabled).

Simplified Chinese Font Support

Simplified Chinese fonts are supported when using the GSW Mobile Clients for Windows Pocket PC 2003/PC 2005 (Windows Mobile). The setup is the same as described for the Windows CE .NET 4.2/5.0 mobile clients

Configuration and Application Persistence

It can be frustrating and time consuming if your configuration information is lost over a reboot which is common with Windows CE and Pocket PC operating systems. GSW has provided a reliable mechanism to ensure that the GSW Mobile Client application and configuration can be persistent across all types of reboots. Instructions vary depending of the type of GSW mobile client being used. Please review the appropriate section for your client.

- GSW Enhanced Mobile Clients:
  Follow the Tips section for your device. Do not follow the Configuration Persistence configuration below for the GSW Universal Mobile Clients. See page 31 for Enhanced Client Tips.

- GSW Pocket PC 2003 Universal Mobile Clients:
  Follow the instructions on page 45.

- GSW Universal Mobile Clients for Windows CE .NET 4.2
  Follow the instructions below.

GSW Universal Mobile Client Persistence

In brief, the steps are simply to configure the device, save the configuration and move our .CAB files to a persistent folder.

Configuration Persistence

The GSW Mobile Client configuration is saved as a .cab file, which is a compressed archive package definition format.

For each created Session Configuration there will be a corresponding CAB file. For example if a session was saved with the name `'lukexp.gswtc'` then a corresponding cab file with the name `'lukexp.cab'` is automatically created.
Non session specific configuration data is stored in the CAB file `c735x.cab`.

When these files are placed in the persistent CAB folder on your device the GSW mobile client configuration is restored upon reboot. The persistent CAB folder location is device manufacturer and model specific.

Application Persistence

The GSW Mobile Client application is available as a .cab file, which is a compressed archive package definition format. The .cab file location and name of the application is

Location (on your PC)	CAB File Name
C:\Program Files\Georgia SoftWorks Universal Telnet and SSH2 Client for Windows CE ARM4\WCEG_4.ARMV4_G.CAB	
C:\Program Files\Georgia SoftWorks Universal Telnet and SSH2 Client for Windows CE ARM4I\WCEG_4I.ARMV4I_G.CAB	
C:\Program Files\Georgia SoftWorks Universal Telnet and SSH2 Client for Windows CE X86\WCEG_X86.INTEL_X86_G.CAB	

Table 8 - GSW Mobile Client Application CAB File Location

When this file is placed in the persistent CAB folder on your device the GSW mobile client application is restored upon reboot. The persistent CAB folder location is device manufacturer and model specific.

Persistence Instructions

Once you have the GSW Mobile Client configuration set for your implementation you should save the configuration.

Step 1: Install and run the GSW Mobile Client

Step 2: Configure the GSW Mobile Client as required for your environment

Step 3: When satisfied with the configuration from within the GSW Mobile Client perform the menu item

```
File|Save
```

And save the settings in location below.

```
\Program Files\GSW_Clnt\default.gswtc
```

The file below will automatically be generated upon the Save command

```
\Program Files\GSW_Clnt\default.cab
```

Step 4: From within the GSW Mobile Client, switch to 'User Mode' using the menu item

```
File|Security
```

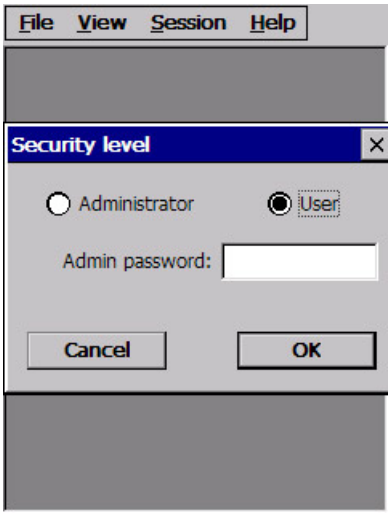


Figure 30: Switch from Administrator to User Mode

Step 5: On the device launch the File Manager and copy the configuration and application .cab files

```
\Program Files\GSW_Clnt\default.cab
\Program Files\GSW_Clnt\c753x.cab
```

to the Persistent CAB folder.

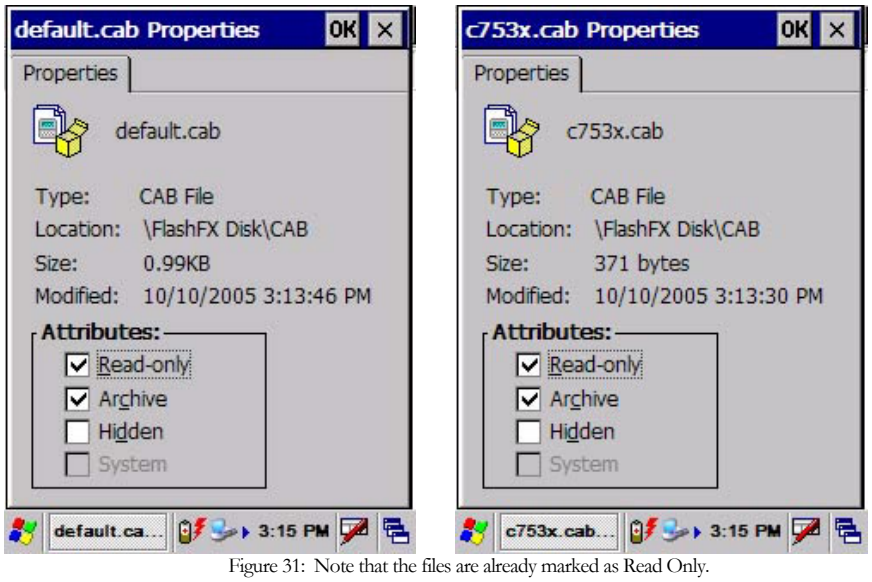


Figure 31: Note that the files are already marked as Read Only.

Mark the files as `Read Only`.
In this case the persistent CAB folder location is `\FlashFX Disk\CAB`, however the persistent folder is device manufacturer and model specific.

Step 6: Copy the application cab file defined in the Application Persistence section (page 42) to the Persistence folder on the device. Mark it as `Read Only`

Step 7: Now you should be able to cold boot the device and the client should automatically launch with the correct configuration.

GSW Pocket PC 2003 Universal Mobile Client Persistence

Configuration Persistence

The GSW Mobile Client configuration is saved as a .cab file, which is a compressed archive package definition format.

For each created session configuration there will be a corresponding CAB file. For example if a session was saved with the name `'lukexp.gswtc'` then a corresponding cab file with the name `'lukexp.cab'` is automatically created.
Non session specific configuration data is stored in the CAB file `cppc2003.cab`.

When these files are placed in the persistent CAB folder on your device the GSW mobile client configuration is restored upon reboot. The persistent CAB folder location is device manufacturer and model specific.

Application Persistence

The GSW Mobile Client application is available as a .cab file, which is a compressed archive package definition format. The .cab file location and name of the application is

Location (on your PC)	CAB File Name
C:\Program Files\Georgia SoftWorks Universal Telnet and SSH2 Client for PPC2003\CPPC2003.PPC2003_ARM.CAB	

Table 9 - GSW PPC 2003 Mobile Client Application CAB File Location

When this file is placed in the persistent CAB folder on your device the GSW mobile client application is restored upon reboot. The persistent CAB folder location is device manufacturer and model specific.

Persistence Instructions

Once you have the GSW Mobile Client configuration set for your implementation you should save the configuration.

Step 1: Install and run the GSW Mobile Client

Step 2: Configure the GSW Mobile Client as required for your environment

Step 3: When satisfied with the configuration from within the GSW Mobile Client perform the menu item

```
File|Save
```

And save the settings in location below

```
\My Documents\default.gswtc
```

The file below will automatically be generated upon the Save command.

```
\My Documents\default.cab
```

Step 4: On the device launch the File Manager and copy the configuration and application .cab files

```
\My Documents\default.cab
\Program Files\Georgia SoftWorks\CPPC2003\cppc2003.cab
```

to the Persistent CAB folder

Mark the files as `Read Only`

The persistent folder is device manufacturer and model specific

Step 5: Copy the application cab file defined in the Application Persistence section (page 45) to the Persistence folder on the device. Mark it as `Read Only`

Step 6: Now you should be able to cold boot the device and the client should automatically launch with the correct configuration

Tips for Intermec CK30

Following are a few **Tips** when installing the GSW SSH2/Telnet Client for the above device running Windows CE .NET Version 4.2

1. **Menu Accelerators / Shortcuts**

   As of this writing the Intermec CK30 does not provide mouse/stylus capability via a touch screen. In order to provide a more convenient method of configuration the following accelerator keys are available. They are available for all Mobile Clients for Windows CE .NET 4.2 but are especially useful for the Intermec CK30.

   `F2 – Save Session Settings`

   `F5 – File|Session Configurations …`

   `F6 – Session|Connect`

   `F7 – Session|Settings`

   `F8 – File|Exit`

2. **Persistence over a 'Cold Reset'**

   After initial installation, please complete these steps as well as anytime the configuration changes.

   Once the connection settings are configured and tested you can ensure that these settings will still exist after a 'Cold Reset' of the Intermec CK30. This is done by saving the file system and registry to flash memory. This is accomplished by performing the following steps.

   `System Main Menu|Configuration Utility|File Backup|Backup the File System`
   and
   `System Main Menu|Configuration Utility|Save to Flash`

3. **Startup – Default Connection Settings**

   - The file "`\CK_FFS\Georgia SoftWorks C753X\default.gswtc`" is loaded on startup if found.
   - If the security level is '`user`' then the GSW SSH2/Telnet Client will attempt to connect.

4. **Application Protection**

   Use the `File|Security` dialog as described in the Application Protection (page 54) section.

5. **Warm boot the device after you install the client. The GSW Mobile Client will automatically launch.**

6. **The GSW Mobile Client is also accessible via**

   `System Main Menu|GSW Client`

7. **How to disable the automatic launch of the TE2000 client**

   a. Either delete or rename the file `\Windows\StartUp\TE2000.lnk`

   b. Run

   `System Main Menu|Configuration Utility|File Backup`

8. **BEEP Sound – Complete beep operation. Extended features available for SAP - See below.**

9. **LED Color / Blink and beep Association – For use with SAP, SAPConsole**

   Using the ABAP Code Generate Bell you can associate different light-blink-colors based on the notify_bell_signal value. You can control the number of beeps, the color of the led (green/orange) and the number of blinks.

   Example: `notify_bell_signal = XYZ`

   ```
   Where
        X = Number of beeps
        Y = Color of LED
             1 = green (left most light),
             2 = orange (right most light)
        Z = Number of blinks
   ```

   Each blink is turned on for the same time as the beep

10. **Scrolling and Mouse Support**

    The Intermec CK30 does provide screen scrolling and mouse support via keyboard control. The `Alt-Down` combination puts the CK30 into a "Screen Scrolling and Mouse Mode" and brings up a pointer that can be manipulated by numeric keys. Please see the Intermec manual for further details. To dismiss the pointer enter the `Alt-Down` again.

    Note: Keyboard data entry functionality is not fully available when in the "Screen Scrolling and Mouse Mode". Simply put, dismiss the pointer prior to entering text.

Tips for Intermec CV60

Following are a few **Tips** when installing the GSW SSH2/Telnet Client for the above device running Windows CE .NET Version 4.2

1. **Persistence over a 'Cold Reset'**

   After initial installation, please run **START | Shutdown** on the device.

   Shutdown saves the device registry to persistent storage.

2. **Uses Standard Accelerators and Shortcuts for all CE .NET 4.2 devices (page 34).**

3. **Startup – Default Connection Settings**

   - The file "`\Application Data\Georgia SoftWorks C753X\default.gswtc`" is loaded on startup if found.
   - If the security level is '`user`' then the GSW SSH2/Telnet Client will attempt to connect.

4. **Application Protection**

   Use the `File|Security` dialog as described in the Application Protection (page 54) section.

5. **Warm boot or cold boot the device after you install the client. The GSW Mobile Client will automatically launch.**

6. **The GSW Mobile Client is also accessible through**

   `'Program Files' and a Desktop shortcut`

7. **How to disable the automatic launch of the TE2000 client**

   a. Either delete or rename the file `\Windows\StartUp\TE2000.lnk`

8. **BEEP Sound – Complete beep operation.**

Tips for PSION-TEKLOGIX WorkAbout Pro, 7535 and 8525 devices

Following are a few **Tips** when installing the GSW SSH2/Telnet Client for the above devices running Windows CE .NET Version 4.2

1. **Persistence over a 'Cold Reset'**

   By default the GSW Telnet Client is installed to a persistent directory. The directory is

   `\Flash Disk\Georgia SoftWorks C753X`

   - **User Fonts** – Your fonts need to reside in two locations.

     \Windows\Fonts

     And ***ALSO***

     `\Flash Disk\Georgia SoftWorks C753X`

2. **Use Standard Accelerators and Shortcuts for all CE .NET 4.2 devices (page 34).**

3. **Startup – Default Connection Settings**

   - The file "`\Flash Disk\Georgia SoftWorks C753X\default.gswtc`" is loaded on startup if found.

   - If the security level is '`user`' then the GSW SSH2/Telnet Client will attempt to connect.

4. **Additional Files**

   The setup program will install the file "`\Flash Disk\StartUp\reinst.bat`".

   Please do not delete or modify this file as it is required for persistence and automatic startup of the client.

5. **Application Protection**

GSW Telnet supports the security settings available on the Psion-Teklogix devices. The settings are available via `Start|Security`

Tips for SYMBOL MC 9060G devices

Following are a few **Tips** when installing the GSW SSH2/Telnet Client for the above devices running Windows CE .NET Version 4.2

1. **Persistence over a 'Cold Reset'**

   By default the GSW Telnet Client is installed to a persistent directory. The directory is

   `\Application\Georgia SoftWorks C753X`

   - **User Fonts** – Your fonts need to reside in two locations.

     \Windows\Fonts

     And ***ALSO***

     `\Application\Georgia SoftWorks C753X`

2. **Uses Standard Accelerators and Shortcuts for all CE .NET 4.2 devices (page 34).**

3. **Startup – Default Connection Settings**

   - The file "`\Application\Georgia SoftWorks C753X\default.gswtc`" is loaded on startup if found.

   - If the security level is '`user`' then the GSW SSH2/Telnet Client will attempt to connect.

4. **Additional Files**

   The setup program will install the file "`\Application\StartUp\reinst.bat`".

   Please do not delete or modify this file as it is required for persistence and automatic startup of the client.

5. **Application Protection**

   Use the `File|Security` dialog as described in the Application Protection (page 54) section.

Tips for LXE MX3X Devices

Following are a few **Tips** when installing the GSW SSH2/Telnet Client for the LXE MX3X running Windows CE .NET Version 4.2

`Note: Please verify that you are running version` MX3XGC4201C or later of the LXE firmware. You can view the version on your device by

`Start|Settings|Control Panel|About|Versions`

1. **Persistence over a 'Cold Reset'**

   By default the GSW Telnet Client is installed to a persistent directory. The directory is

   `\System\Georgia SoftWorks C753X`

   - **User Fonts** – Your fonts need to reside in two locations.

     `\Windows\Fonts`

     And ***ALSO***

     `\System\Georgia SoftWorks C753X`

2. **Uses Standard Accelerators and Shortcuts for all CE .NET 4.2 devices (page 34).**

3. **Startup – Default Connection Settings**

   - The file "`\System\Georgia SoftWorks C753X\default.gswtc"` is loaded on startup if found.

   - If the security level is '`user'` then the GSW SSH2/Telnet Client will attempt to connect.

4. **Additional Files**

   The setup program will install the file "`\System\autoexec.bat".`

   Please do not delete or modify this file as it is required for persistence and automatic startup of the client.

5. **Application Protection**

   The **LXE MX3X** provides Applock application security software. The GSW SSH2/Telnet Mobile clients are compatible with Applock and may be launched from Applock.

   In the Applock configuration you must specify which application is to be launched and you must specify a full path to the application. Please specify the following path in the dialog.

   `\Windows\GSW_lnch.exe`

Before configuring the system for Applock, pre-configure all the settings (in particular the `default.gswtc` file) and then go to `File|Security` and configure the security to the *user* level and press OK.

Tips for PSC Falcon 4410

Following are a few **Tips** when installing the GSW SSH2/Telnet Client for the above device running Windows CE .NET Version 4.2

The PSC Falcon 4410 has the capability for full application lockout. The steps for implementation of this feature follows.

1. Application Protection

Step 1: Run `gsce_4ig.exe` on your PC and install the GSW Universal Mobile Client for ARMV4I.

Step 2: Configure the GSW Mobile Client as required for your environment

Step 3: When satisfied with the configuration from within the GSW Mobile Client perform the menu item

```
File|Save
```

and save the settings in

```
\Program Files\GSW_Clnt\default.gswtc.
```

And this will automatically generate the file

```
\Program Files\GSW_Clnt\default.cab
```

Step 4: From within the GSW Mobile Client, switch to 'User Mode' using the menu item

```
File|Security
```

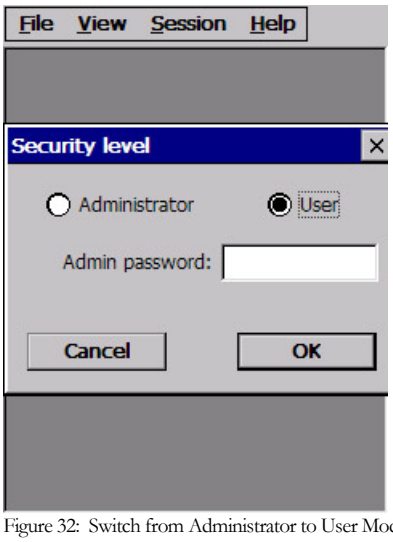


Figure 32: Switch from Administrator to User Mode

Step 5: On the device launch the File Manager and create the Folder

```
\FlashFX Disk\CAB
```

And copy the device files

```
\Program Files\GSW_Clnt\default.cab
\Program Files\GSW_Clnt\c753x.cab
```

to the folder created above.

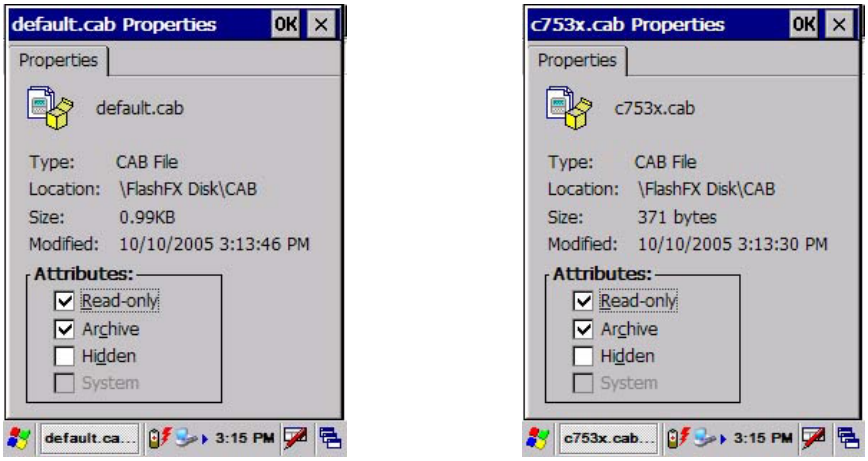


Figure 33 - Note that the files are already marked as Read Only.

Step 6: Copy the file

```
C:\Program Files\Georgia SoftWorks Universal Telnet and
SSH2 Client for Windows CE ARM4I\WCEG_4I.ARMV4I_G.CAB
```

From your PC (the PC used in Step 1) to

`\FlashFX Disk\CAB` on your Falcon 4410 device, and mark it *Read Only*

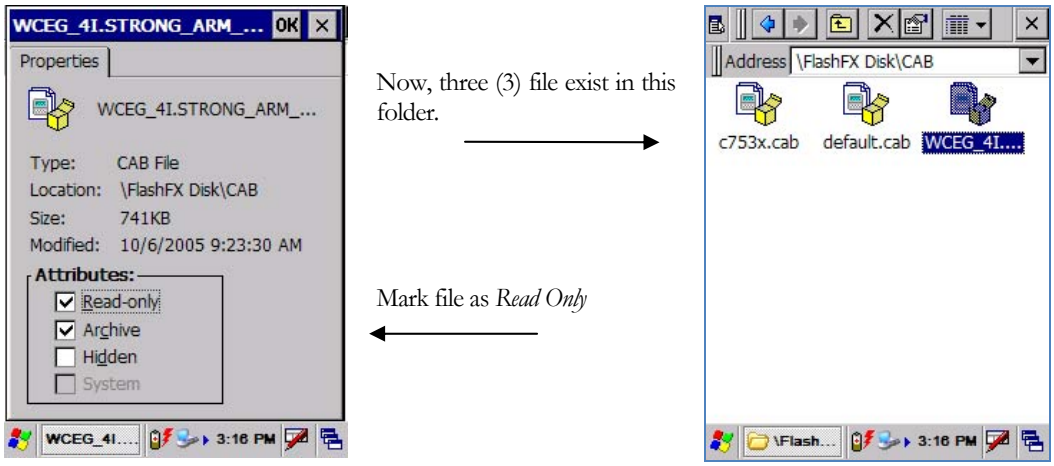
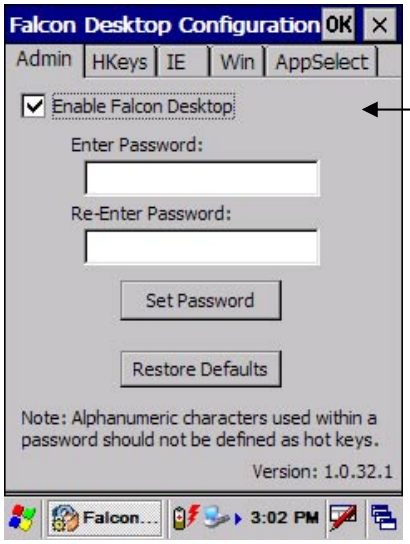


Figure 34: File copy from PC to Device

Step 7: On the device go to:

`Start|Programs|Falcon Management|FDU Admin Tool`

And set the configuration options as shown using the different Tabs below.



A. Make sure that the Enable Falcon Desktop checkbox is checked.

Figure 35: Falcon 4410 Application Title

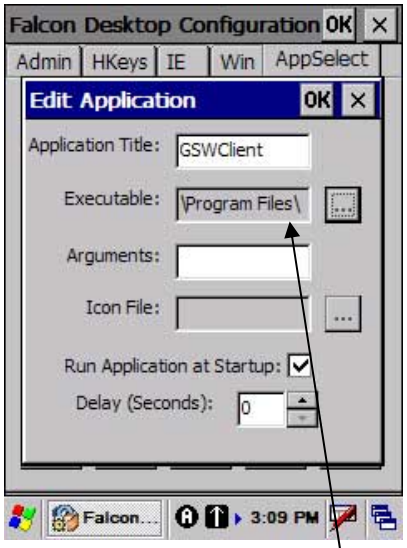


Figure 36: Falcon 4410 Application Title

B. Enter the Application Title

C. Next Click on the '…' button. When you click the button it opens up the File Selection dialog below.

D. Navigate to the GSW_Lnch.exe in the folder \Program Files\GSW_Clnt Select the GSW_Lnch.exe Click OK, and the filename of the Executable is filled in.

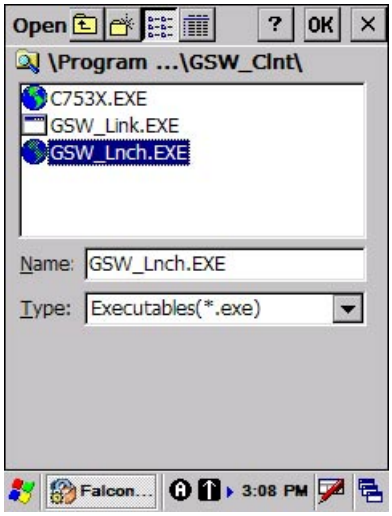
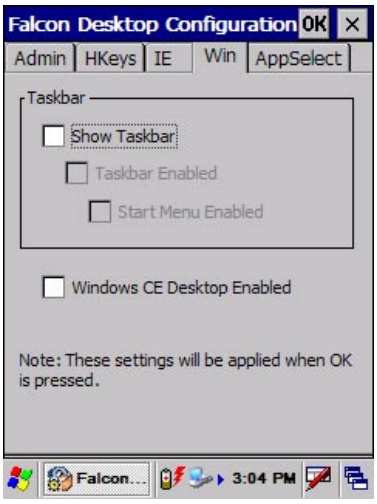


Figure 37: File Selection Dialog

Next Select the Win tab and make sure that the Show Taskbar checkbox is clear.



E. Select the Win Tab and make sure that the Show Taskbar checkbox is clear.

F. Also make sure that the Windows CE Desktop Enabled checkbox is clear.

Figure 38: Falcon Clear Win Tab Checkboxes

Make sure the two checkboxes are clear.

Step 8: Cold boot the device.
The GSW Mobile Client will automatically launch and connect after the boot.

Application Protection

Many times System Administrators request the capability to protect certain configuration values associated with the application from being inadvertently or accidentally modified by users. Georgia SoftWorks Mobile Clients either provide this functionality or integrates and cooperates with devices that contain this feature.

The GSW Mobile Clients accomplish this protection by recognizing a *user* and a password protected *administrator* security level. If the device provides a *user* and *administrative* level, the GSW Mobile client integrates and cooperates with the device feature. Otherwise the GSW Mobile Client provides a *user* and *administrative* security level.

The *administrator* security level is allowed unrestricted access to the application. The *user* security level is not allowed to modify the configuration values or exit the GSW Mobile Client application.

The System Administrator can protect access to operations and values associated with the following menu items.

- `File|New, File|Open, File|Exit`
- `Session|Settings`

Upon selecting the menu item `File` you will notice that while at the *user security level* the menu items `New`, `Open` and `Exit` are disabled. The same is true for the `Session|Settings` menu item.

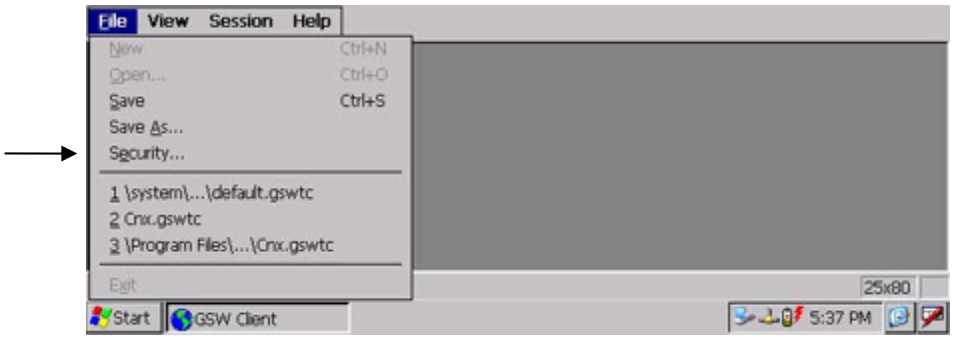


Figure 39: GSW Mobile Client Security Levels

Only the *administrator security level* has access to these items.

When using the GSW Mobile Client Application Protection you can enable the *administrator* security level by selecting the menu item `File|Security` as shown above. `The File|Security` menu item is enabled on Intermec, LXE and Symbol devices. The `File|Security` menu item is disabled on Psion-Teklogix devices because the GSW Mobile Client uses Psion-Teklogix security levels and is settable under `Start|Security`.

Upon selecting the Security menu item the Security level dialog is presented.

Figure 40: GSW Mobile Client Security Level Selection

To switch from User to Administrator Security level you select `Administrator` and enter the Admin Password. The Admin Password is `7062651018.` Click OK. This will enable all configuration and operations for the Administrator.

To switch from *Administrator* to *User* Security level, select `User` and click OK. A user password is not required.

Please see the tips section for these mobile device clients for any special tips for Application Protection.

- Intermec CK30
- Intermec CV60
- LXE M3X3
- Psion-Teklogix 7535, Psion-Teklogix 8525
- Symbol MC 9060G
- PSC Falcon 4410

Backup and Restore the Georgia SoftWorks SSH2/Telnet Server

At certain times you may encounter a scenario where your system needs to be rebuilt and you want to transfer the GSW and its settings. This entails two steps.

1. Back up the GSW UTS installation directory and all of its subdirectories.
2. Back up the following registry key:

   HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\GS_Tnet\Parameters

   If you are using the SSH2 Server then you need to also back up the following registry key.

   HKEY_LOCAL_MACHINE\SOFTWARE\GeorgiaSoftWorks\GSW_SSHD\Parameters

On the rebuilt system you will need to:

1. Restore the GSW UTS Installation directory as on the original system.
2. Re-run the GSW UTS setup program.
3. If using the GSW SSH2 Server, re-run the GSW SSHIELD setup.
4. Restore the registry keys that were backed up in step 2 above.
5. Re-register the software using the standard registration procedure or install the Floating license.

How to use the GSW Universal Terminal Server for Windows

Georgia SoftWorks Client

Note: The example below is for the GSW Telnet Server however the same procedures apply to the GSW SSH2 Client unless noted.

Follow these instructions to open the Georgia SoftWorks Client window.

1. Click the **Start** button at the bottom left corner of your screen.
2. Click **Programs**
3. Move the mouse cursor to "Georgia SoftWorks UTS Server" entry.
4. Click to the right where you see "**GS Telnet Client**"

At this point, the Client window is open and you will get the host prompt (Figure 40).

Host

At this prompt, you should enter the hostname that you wish to connect. The hostname is the name your Windows NT/XP/VISTA/2000/2003/2008 computer is referenced by via TCP/IP. This can be a text string or an actual IP address. This name will appear in the client windows title bar.

Example:

Host: `Soloman`

`OR` (if you know the IP address you can enter the address)

Host: `100.100.100.101`

`Or`

Host: `<ENTER>`

This will connect to the local host. You must be at the server for this to work (Useful for testing).

Figure 41: Host Prompt

After the Host is found you will see the Georgia SoftWorks Telnet Server connection banner[5]. The connection banner contains the version of the telnet server as well as the number of sessions available and connected. You are then presented with the Windows NT/XP/VISTA/2000/2003/2008 logon prompt.

Login ID

At this prompt you should enter a valid Windows NT/XP/VISTA/2000/2003/2008 login id.

Example:

Login: `JohnSmith`

[5] The SSH2 Server has a different connection banner than the Telnet Server. See the User Manual for the SSH2 Connection Banner.

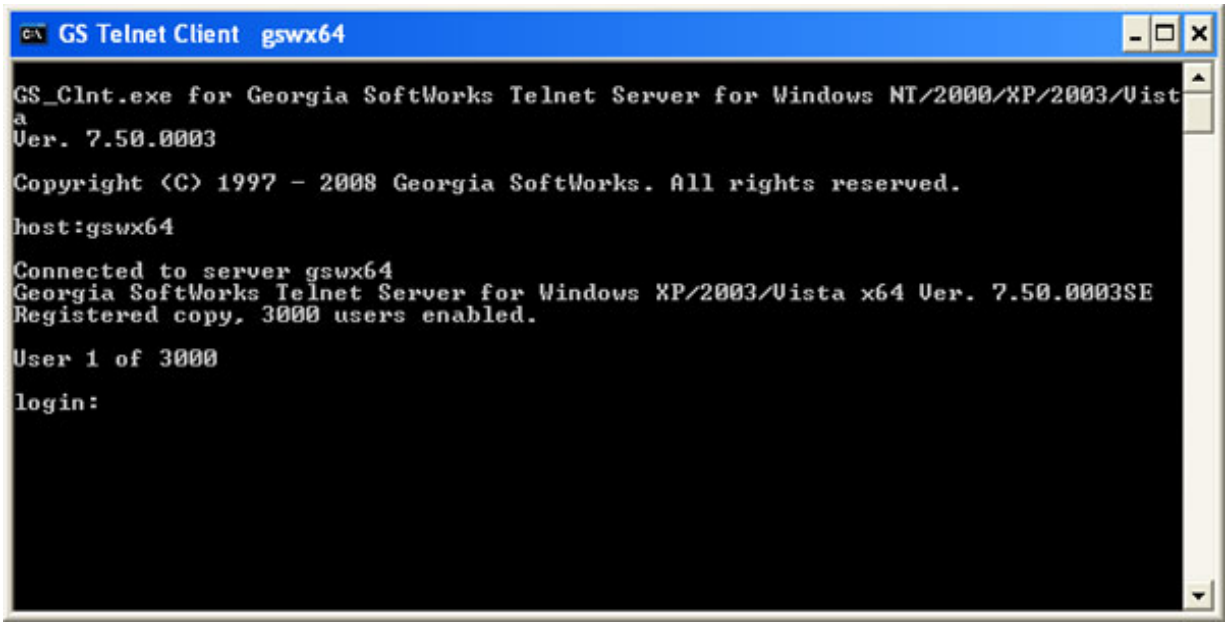

GS Telnet Client gswx64
GS_Clnt.exe for Georgia SoftWorks Telnet Server for Windows NT/2000/XP/2003/Vista
Ver. 7.50.0003
Copyright (C) 1997 - 2008 Georgia SoftWorks. All rights reserved.
host:gswx64
Connected to server gswx64
Georgia SoftWorks Telnet Server for Windows XP/2003/Vista x64 Ver. 7.50.0003SE
Registered copy, 3000 users enabled.
User 1 of 3000
login:

Figure 42: Logon Prompt

Below is a screen shot of the GSW SSH2 Connection Banner.

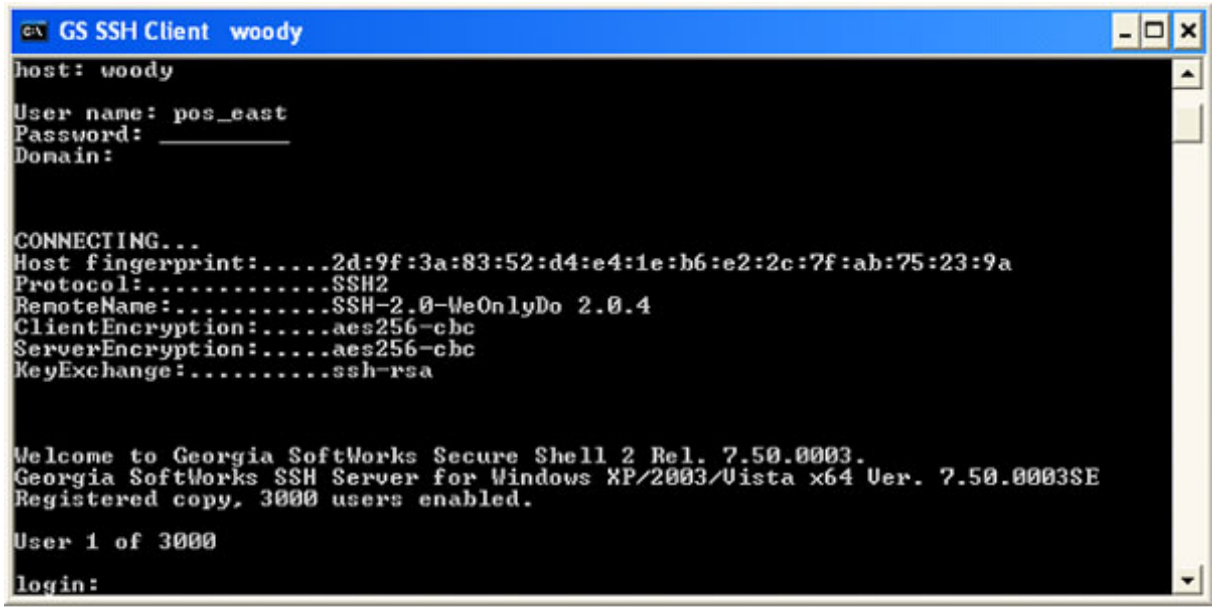


Figure 43: SSH2 Connection Banner

This is the password associated with the Login ID. It will not be displayed when typed.

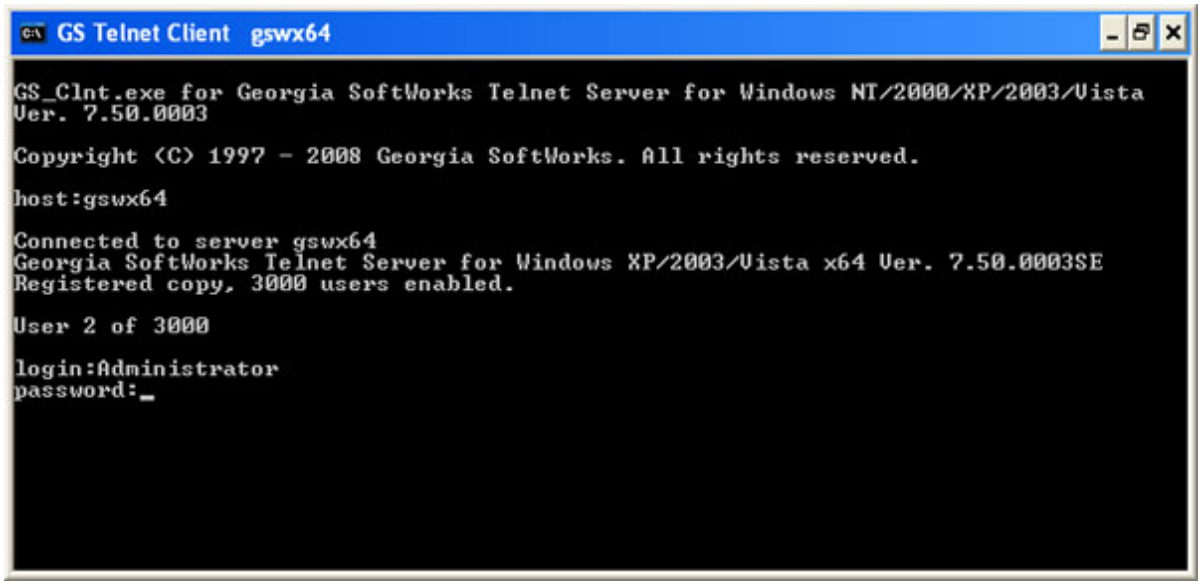

GS Telnet Client gswx64
GS_Clnt.exe for Georgia SoftWorks Telnet Server for Windows NT/2000/XP/2003/Vista
Ver. 7.50.0003
Copyright (C) 1997 - 2008 Georgia SoftWorks. All rights reserved.
host:gswx64
Connected to server gswx64
Georgia SoftWorks Telnet Server for Windows XP/2003/Vista x64 Ver. 7.50.0003SE
Registered copy, 3000 users enabled.
User 2 of 3000
login:Administrator
password:

Figure 44: Password Prompt

Domain Name

This is an optional field. If you do not wish to connect to a specific domain then you may simply press "**<enter>**". Otherwise type in the domain you want to connect. You may eliminate the domain prompt either by using command line options or by setting a default domain on the Windows NT/XP/VISTA/2000/2003/2008 Server. To set the default domain for all users follow the instructions on page 213. The Georgia SoftWorks Telnet Client Command line options are described next.

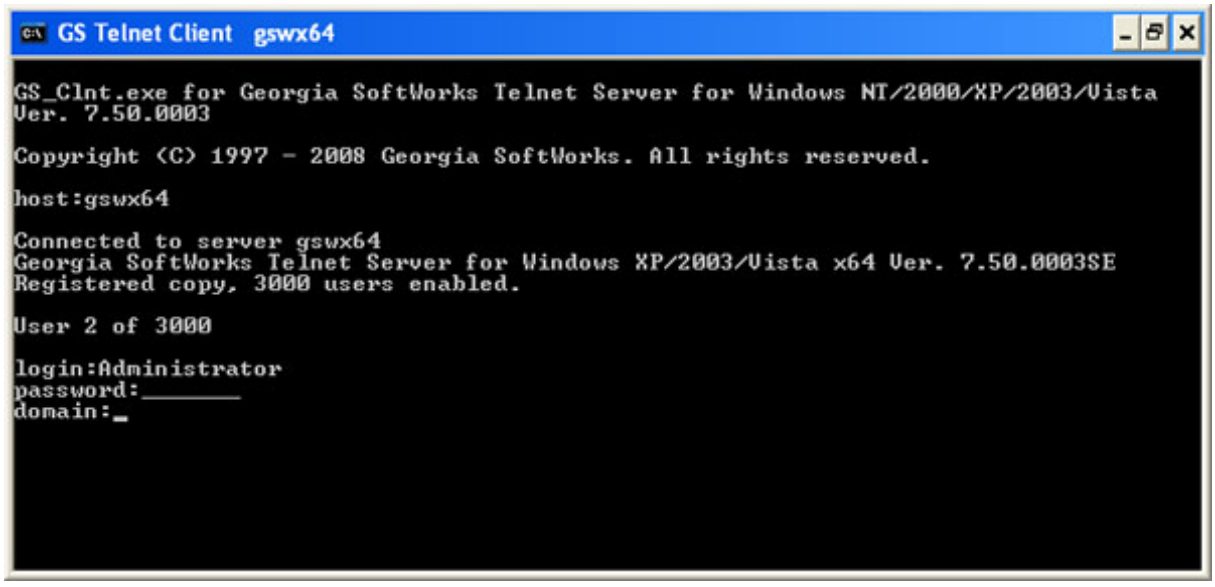

GS Telnet Client gswx64
GS_Clnt.exe for Georgia SoftWorks Telnet Server for Windows NT/2000/XP/2003/Vista
Ver. 7.50.0003
Copyright (C) 1997 - 2008 Georgia SoftWorks. All rights reserved.
host:gswx64
Connected to server gswx64
Georgia SoftWorks Telnet Server for Windows XP/2003/Vista x64 Ver. 7.50.0003SE
Registered copy, 3000 users enabled.
User 2 of 3000
login:Administrator
password:
domain:

Figure 45: Domain Prompt

Georgia SoftWorks Desktop Client Command line options – Description

In addition to superior Perfect PC terminal emulation the Georgia SoftWorks Telnet and SSH2 Clients have powerful command line options facilitating faster, easier and more flexible connections. Many of these options such as the Host, Username, Password and Domain can be used to eliminate prompting by the client or server when connecting to the UTS Server. The following optional command line parameters may be used[6].

Parameter	Description
-a	This specifies that this Georgia SoftWorks Client can AutoLogon (page 95)
-b	Answerback Text passed to the Server and stored in the Environment variable gwtn_answerback. See page 69 for more details and PPC configuration.
-uUserName	Specifies the name of the User
-pPassword	Specifies password for the user. Use '.' if user has no password. Notice that this is a lowercase "p".
-dDomain	Specifies the domain of the user. Use '.' if you want to use default domain or no domain
-hHostname	This specifies host name to connect to.
-Hheartbeat Time	This specifies our client side heartbeat. You need that parameter for the session cleanup! See page 109.
-i	Enable SSH2 client to use FIPS 140-2 when connecting to SSH2 server. Note: SSH2 Server must be installed and FIPS must be Enabled. Only valid with SSH2 client.
-k	Disables the mouse in the telnet or SSH2 session
-PportNumber	Specifies the port number to use for telnet or ssh2. This port must also be set on the Server in the services file. Notice this is an uppercase "P"
-c	Specifies that the client uses Encryption. This option works only in conjunction with corresponding settings on the server. See page 78 on setting up encryption. NOTE: This option is only valid for the TELNET Server.
-r1=printername -r2=printername … -r9=printername	This specifies Printer1, Printer 2, and Printer 3 … Printer 9 for Enhanced Mode client side printing. No spaces are allowed in the printer name. Please see page 166 for more information.
-f[index] or –F[index]	This allows additional form feed control capabilities. With some applications unexpected form feeds will be generated at the end of the document causing misalign output and paper waste. If this behavior is noticed then the -f option may help in suppressing the extra form feeds. Optional index is the virtual printer index. This option uses the copy command to print.
-scmddelay	This specifies the Command Output Display Delay time (Milliseconds) for the results data displayed in the gs_clnt.exe/gs_ssh.exe window as a result of executing a Client Side Command (page 196) from within a telnet or SSH2 session. A primary function of the Client software is to display and refresh the Telnet or SSH2 Session Window based on Server Output. So when a Client Side Command displays results in the Session Window, a time is specified for the display of the Client Side Command Output in the gs_clnt.exe/gs_ssh.exe window before the display of server side data is resumed. The default is 2000[ms] (two seconds).
-U	Enable Unicode character processing for input and output. See page 190.
-xClient Caption String	The User has additional control over the caption text displayed in the client window when using the Georgia SoftWorks Telnet or SSH2 Client. This helps identify specific sessions especially when multiple sessions are opened simultaneously. No spaces are allows in the Client Caption string. See example on next page for further details
-z	Disable the Automatic Update of the Georgia SoftWorks Telnet or SSH2 Client.

Table 10 - GSW Telnet and SSH2 Client Command Line Options

[6] Note: Dash "-" and Slash "/" character are interchangeable when specifying command line parameters.

EXAMPLE - GEORGIA SOFTWORKS CLIENT CAPTION STRING

-xClient Caption String

The User has additional control over the caption text displayed in the client window when using the Georgia SoftWorks clients. This helps identify specific sessions especially when multiple sessions are opened simultaneously.

The command-line option

```
-xText
```

specifies a text string that is displayed in the caption on the client window. The text is appended to the caption after space as x:Text. For instance if the option -xDavid was entered the title bar in the client window would be displayed as show below (soloman is the hostname).

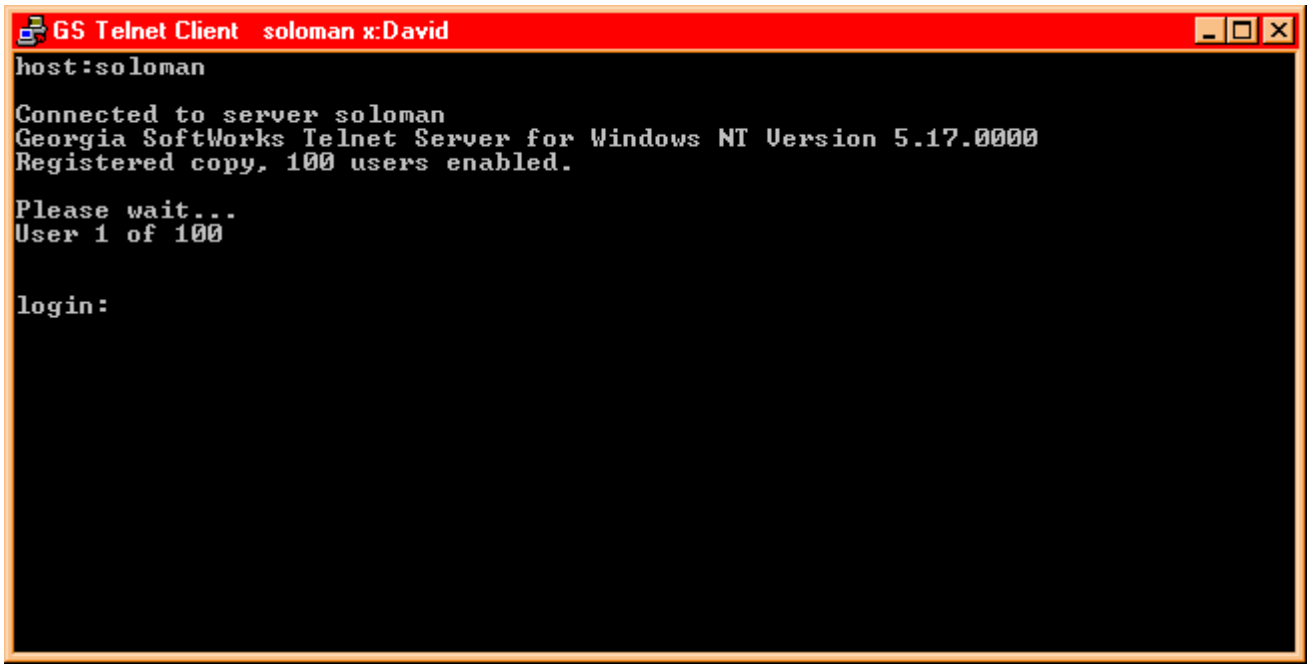


Figure 46: Client Title Bar Caption

GSW Telnet and SSH2 Client command line options - Usage

Following is an example for specifying client command line parameters. The *GS SSH2/Telnet Client* shortcut invokes the batch file `GS_SClnt.bat (for Telnet) or GS_SSSH.bat` (for SSH2) which in turn launches the Georgia SoftWorks SSH2/Telnet Client. The GS_SClnt.bat and GS_SSH2.bat files reside in the GS_UTS installation directory. The contents of the batch files look as follows.

```
@echo off
:start

@if exist once1.bat do call once1.bat
@if exist once1.bat do del once1.bat

@gs_clnt.exe[7]

@if errorlevel 2 goto copy
@exit

:copy
@copy gs_clnt.new gs_clnt.exe > gsnull.txt

@if exist once2.bat do call once2.bat
@if exist once2.bat do del once2.bat

@goto start
```

The line ***@gs_clnt.exe*** is the line that launches the Georgia SoftWorks Telnet Client. For SSH2 the client name is **gs_ssh.exe**.

Command Line Parameters will be added to this line in the batch file.

In most cases the `GS_SClnt.bat/GS_SSH2.bat` files will be modified to provide the parameters in a transparent manner to the user.

EXAMPLE - GEORGIA SOFTWORKS SSH2/TELNET CLIENT COMMAND LINE OPTIONS

Host:	soloman
Heartbeat:	150
UserName:	johndoe
Password:	fastest
Domain:	Use the default domain.
Encryption:	Yes
Client Caption:	System1

[7] The SSH2 client name is gs_ssh.exe

The Command Line Parameters used are:

```
-H150 -hsoloman -ujohndoe -c -pfastest -d. -xSystem1
```

Note: The last dot is for the default domain

And thus the `GS_SClnt.bat` file will be modified as shown below adding the command line parameters.

```
@echo off
:start

@if exist once1.bat do call once1.bat
@if exist once1.bat do del once1.bat

@gs_clnt.exe -H150 -hsoloman -ujohndoe -c  -pfastest -d. -xSystem1
@if errorlevel 2 goto copy
@exit

:copy
@copy gs_clnt.new gs_clnt.exe > gsnull.txt

@if exist once2.bat do call once2.bat
@if exist once2.bat do del once2.bat

@goto start
```

Automatic Update of Georgia SoftWorks SSH2/Telnet Client

Always use the matching version of the Georgia SoftWorks SSH2/Telnet Client with the Georgia SoftWorks UTS Server.

When a Georgia SoftWorks Client connects to the GSW Universal Terminal Server, the GSW UTS is able to determine the version of the GSW Client that is connecting. If the version of the GSW SSH2/Telnet Client is different than the GSW UTS version, the GSW UTS updates the remote (client) computer with the appropriate GSW Client for that version of the GSW UTS Server.

As new versions of the software are released, occasionally matching versions of the GSW Client and UTS is required to take advantage of certain features. Sometimes this required the System Administrator to either visit the remote site or via telephone walk remote users through instructions to install or update the GSW Client software.

Additionally, System Administrators may be administering many GSW Universal Terminal Servers distributed throughout a large region. Different versions of the GSW UTS may be installed at different sites. Regardless of the version installed the Administrator will be able to automatically use the appropriate version of the GSW Client.

Note: This feature requires the minimum GSW Telnet Server **and** Client version 6.26.xxxx.

Important Note to Customers of Versions Prior to 6.26

Previous versions of the GSW Telnet Client invoked the client executable directly from the shortcut.

Starting with Version 6.26 the short cut invokes the batch file GS_SClnt.bat which launches the Georgia SoftWorks Telnet Client. The batch file must be invoked for the Automatic Client Update to occur.

If you want to disable the Automatic Update of the GSW SSH2/Telnet Client then use the `-z` command line option.

When the Remote User connects to the GSW UTS Server computer and the versions do not match the User will see the following screen. The Text Upgrade initiated is displayed. While the appropriate client is being transferred a series of periods is displayed indicating the progress of the transfer.

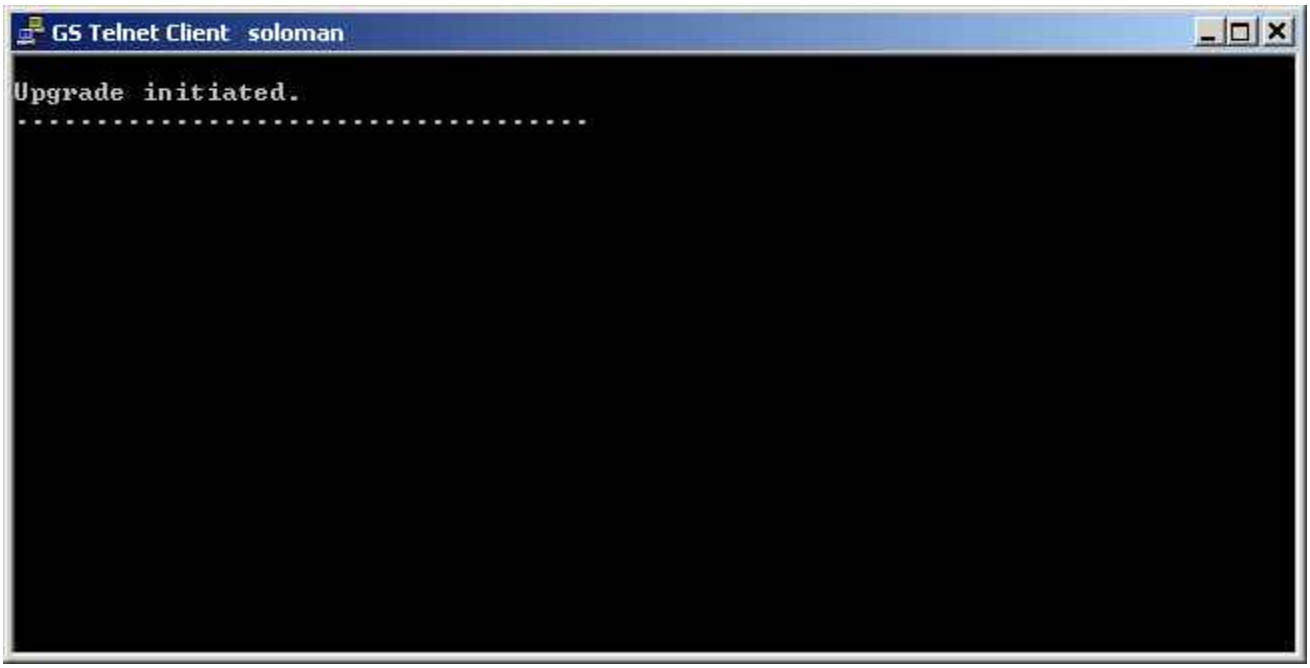


Figure 47: Automatic GSW Client Upgrade Initiated

Once the transfer of the client is complete you will see a screen similar to the one below displayed requesting a key to be pressed to continue.

GS Telnet Client soloman
Upgrade initiated.
New version of client software downloaded.
Your session will restart in a moment.

Figure 48: Automatic Client Upgrade – Session Restart

After the session is restarted you will be prompted again for the Host. Proceed and log on as usual with the proper GSW Client version for the GSW UTS Server for which you are connected.

GS Telnet Client
Upgrade initiated.
New version of client software downloaded.
Your session will restart in a moment.
GS_Clnt.exe for Georgia SoftWorks Telnet Server for Windows NT/2000
Version 6.26.0003
Copyright (C) 1997 - 2002 Georgia SoftWorks.
host:

Figure 49: Automatic Client Upgrade - Host Prompt

Developer Tip: If a client side application must launch the Georgia SoftWorks Client then the application should check the return code from the call to `gs_clnt.exe/gs_ssh.exe.` If the rerun code is two (2) then the client and server versions are different and newer client was copied to the file `gs_clnt.new`. It should be renamed and copied to `gs_clnt.exe/gs_ssh.exe` and then launched.

Application Title Display

You may want the Application Title to display in the title bar of the Georgia SoftWorks Client Windows Title. This capability is *disabled* by default. To enable you should set the gwtn_show_console_title environment variable in your logon script (page 158).

The environment variable for displaying the Application Title in the Georgia SoftWorks Client Window title bar is:

gwtn_show_console_title

Valid values for the environment variable are:

Yes – Enable the display of the application title in the Georgia SoftWorks Client Window Title

No – Disable the display of the application title in the Georgia SoftWorks Client Window Title

For example to enable the display of the Application Title in the Georgia SoftWorks Client you would enter:

```
set gwtn_show_console_title=Yes
```

in the Logon Script for a particular user.

NOTE: No spaces are allowed when setting environment variables.

For example:

`set gwtn_show_console_title=Yes` is correct

`set gwtn_show_console_title = Yes` is not correct.

Answerback Text

The User can pass a text string (up to 20 characters) from the client to the server when connecting. The received text string is stored the environment `gwtn_answerback`. The command-line option

```
-bText
```

specifies a text string that is passed to the server. For Example the command line parameter

```
-bdelta187
```

would be available on the server in the environment variable `gwtn_answerback`. The example below shows both the client MAC address and the Answerback text.

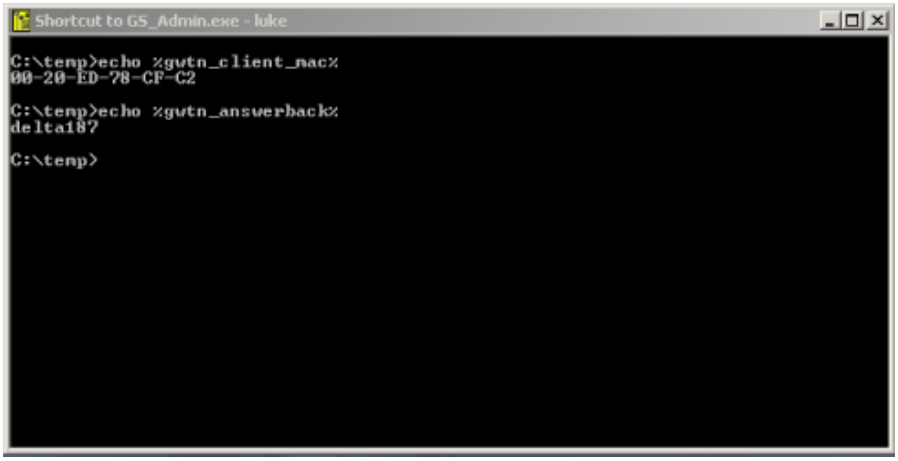


Figure 50: Answerback and MAC Address environment variable

GSW Mobile Device (PPC and Windows CE .NET V4.2) clients configuration.

Below is a screen shot of the GSW Mobile Device configuration for the Answerback text.

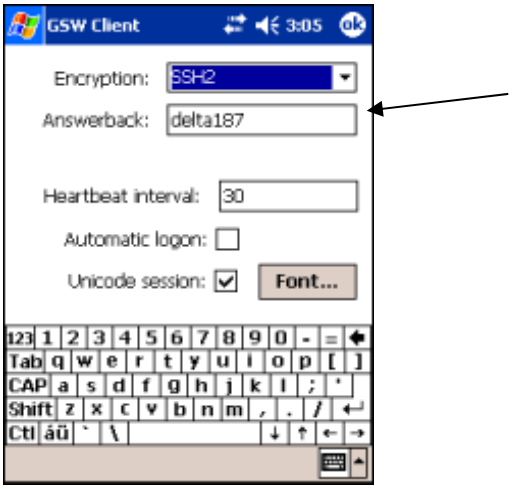


Figure 51: GSW PPC Client Answerback text configuration

Desktop Keyboard Macros

Keyboard macros are a powerful and time saving feature that lets the administrator define custom keys on the device when the session is active[8]. Macros are used for remapping Function keys (`F1 – F12`) to keystroke sequences. Macros definitions have the form

```
Function Key=Keystroke Sequence
or
Function Key=(shift:ctrl:alt) Keystroke Sequence
```

Where

Function Key is F1 through `F12`

and

`(shift:ctrl:alt)`

This is optional extended syntax that provides the capability to specify the `Shift`, `Ctrl` and `Alt` key states. You may want to have a `Shift F1` or `a Ctrl F1, Shift Alt F2,` etc. and the syntax of (`Shift:Ctrl:Alt`) is a fast way to specify if the key is pressed. To indicate a key is pressed is by using the value `1` and so specify that it is not pressed is to use the value `0`.

For example

`(1:0:0)` specifies that the SHIFT key is pressed but not the CTRL or ALT.
`(0:1:0)` specifies that the CTRL key is pressed but not the SHIFT or ALT.
`(0:0:1)` specifies that the ALT key is pressed but not the SHIFT or CTRL.
Or combinations can be specified:
`(1:1:0)` specifies that the SHIFT key and CTRL keys are pressed but not the ALT.
Whitespace is optional.

See the example in the configuration section below for detailed examples.

and

Keystroke Sequence follows the same format as the GSW Termination strings (page 110).

The keys that can be remapped are

Function Keys: `F1,F2,F3,F4,F5,F6,F7,F8,F9,F10,F11,F12`

Configuration

The keyboard macros are defined in the session configuration files. These have gswtc extensions. The configuration files have the "`Windows ini`" format. A new section [`Macros`] needs to be manually added to the configuration file.

[8] Keyboard Marco's are different than Keyboard Accelerators. Accelerators are available on the device when there is no session (outside the session).

For example, to remap all Functions Keys to send capital F, followed by function key index and the enter key you would add the following section to the configuration file on the device (usually GSWClnt.ini).

```
[Macros]
F1=shift-f,1,ENTER
F2=shift-f,2,ENTER
F3=shift-f,3,ENTER
F4=shift-f,4,ENTER
F5=shift-f,5,ENTER
F6=shift-f,6,ENTER
F7=shift-f,7,ENTER
F8=shift-f,8,ENTER
F9=shift-f,9,ENTER
F10=shift-f,1,0,ENTER
F11=shift-f,1,1,ENTER
F12=shift-f,1,2,ENTER

F1=(1:0:0)SHIFT-S, SHIFT-F, 1
F2=shift-f,2,ENTER
F3=shift-f,3,ENTER
F4=shift-f,4,ENTER
F5=shift-f,5,ENTER
F6=shift-f,6,ENTER
F7=shift-f,7,ENTER
F8=shift-f,8,ENTER
F9=shift-f,9,ENTER
F10=shift-f,1,0,ENTER
F11=shift-f,1,1,ENTER
F12=shift-f,1,2,ENTER
```

Terminating a session

Type **exit** at the client window prompt followed by the ENTER key and the session will terminate and the window will clear and then close.

Connecting using a 3rd Party Client

Please see the section on Emulation's for descriptions in connecting to the Georgia SoftWorks UTS for Windows NT/XP/VISTA/2000/2003/2008 using 3rd party clients (page 117.).

Feature Packs - Overview

The Georgia SoftWorks Windows Universal Terminal Server is *packed* with features. The aggregation of the features is geared toward industrial and commercial application. The features logically group into units called packs. All feature packs are included with the Georgia SoftWorks UTS at no extra cost!

Security Pack – (see page 77)

The Security Pack provides the system administrator with confidence that the Windows NT/XP/VISTA/2000/2003/2008 System and the data transferred remains secure. Encryption, access and usage restrictions are among security features implemented.

Performance Pack – (see page 94)

Advanced proprietary algorithms, optimizations and compressions provide for the fastest SSH2/Telnet Server for Windows on the market.

Failure Detection/Recovery Pack – (see page 102)

Industrial and commercial applications demand sophisticated failure detection and recovery methods. Georgia SoftWorks recognized the requirement and has unequaled capabilities in this area.

Legacy Pack – (see page 115)

Proper operation with Legacy applications is the foundation of a quality SSH2/Telnet server. The Georgia SoftWorks Telnet Universal Terminal Server for Windows NT/XP/VISTA/2000/2003/2008 will meet or exceed all expectations with respect to running character oriented and legacy applications.

Emulation Pack – (see page 117)

The Emulation Pack provides all the popular emulation's' required by most 3rd party clients. Not only are the emulation's provided but they are implemented correctly.

Power Features Pack – (see page 131)

The Georgia SoftWorks UTS provides the most powerful, needed and useful features on the market.

Compatibility Pack – (see page 184)

RFC 854 compliance provides access from other platforms allowing the Telnet Server to be utilized by a variety of users.

RF Terminal Features - (See page 184)

Utility Pack – (see page 194)

Several utilities are provided for the telnet user to simplify and ease the use of SSH2/Telnet.

Security Pack

Georgia SoftWorks provides *unmatched security* when using our Telnet Server for Windows. It is the **only** Telnet Server that offers complete **Data Stream Encryption**. The Georgia SoftWorks Telnet server has been submitted to the United States Department of Commence and has obtained the proper license exceptions so it can be legally exported around the world[9].

Data Stream encryption can be enabled on a global or a per user basis with undetectable performance loss. This is useful if users are running accounting, banking, medical or other applications that contain sensitive data.

*Logon **only** encryption* may also be employed. This protects User Ids, Passwords and other logon data.

The Georgia SoftWorks Universal Terminal Server is integrated with Windows NT/XP/VISTA/2000/2003/2008 Security. All Windows NT/XP/VISTA/2000/2003/2008 security concepts apply. The Georgia SoftWorks UTS allows the system administrator to optionally restrict telnet access based on User ID or IP address. These are additional security measures above the normal Windows NT/XP/VISTA/2000/2003/2008 security. The system administrator can specify the users that are allowed to logon via telnet

Security Pack	**Configurable**	**GSW Clients**	**3rd Party Client**
Encrypted Data Stream - Telnet Server Specific	Yes	Yes	No
Encrypted Data Stream – Strong 128 Bit* - Telnet Server Specific	Yes	Yes	No
Encryption - *Enable or Disable based on IP Address – Telnet Specific*	Yes	Yes	
SSH2 Strong Encryption - AES-256 (End to End – Authentication and Data Stream) - GSW SSH2 Server	**Yes**	**Yes**	**Yes**
Encrypted Logon Session - Telnet Server Specific	Yes	Yes	No
FIPS 140-2 Compliant Option – SSH2 Server	**Yes**	**Yes**	No
AES-256 Encrypted Logon Session – SSH2 Server	**Yes**	**Yes**	**Yes**
Connection Restrictions			
- User Id	Yes	Yes	Yes
- IP Address	Yes	Yes	Yes
- 3rd Party Clients	Yes	Yes	Yes
- Connection count	Yes	Yes	Yes
- Connection count by User ID	Yes	Yes	Yes
- Connection count by IP Address	Yes	Yes	Yes
Encrypted Sessions Only – Telnet Server	Yes	Yes	No
Encrypted Sessions Only – SSH2 Server	**Yes**	**Yes**	**Yes**
Specific application	Yes	Yes	Yes
Expired Password Handling	N/A	Yes	Yes
Integrated with Windows Security	N/A	Yes	Yes
* Must have the SE (Strong Encryption) version of the software			

Table 11 - Security Pack

[9] Certain Generic Export Restrictions apply to some countries.

Encrypted Data Stream – Telnet Server

Encryption of the Data Stream for Telnet on Windows NT/XP/VISTA/2000/2003/2008 is another feature *pioneered* by Georgia SoftWorks. Complete Data Stream encryption is available on a global or per user basis when using the Georgia SoftWorks Telnet Client. For encryption to work both the sending and receiving ends of the data must know to encrypt and decrypt the data. Since third party clients would not be aware of encryption or decryption, data stream encryption is only available with the Georgia SoftWorks Telnet Client.

The Setup for Data Stream Encryption requires:

1. The encryption parameter must be passed when invoking the Georgia SoftWorks Telnet Client
2. The setting of an environment variable on the server in either a Global or User login script
3. The registry variable EnableEncryption is set to `1`.
4. The proper Microsoft Windows operating system DLLs and API's are installed on both the client and server systems.

Data Stream Encryption Client Parameters

The parameter `-c` should be passed when invoking the Georgia SoftWorks Windows NT/XP/VISTA/2000/2003/2008 Telnet Client. This can be passed from the command line via the following command:

```
gs_clnt.exe -c
```

The shortcut may be modified to pass Data Stream Encryption parameter.

Data Stream Encryption Server Environment variable.

An environment variable must be set on either a Global or Per User basis to activate Data Stream Encryption.

The environment variable for the complete data stream encryption is:

gwtn_encrypt_session

in the Logon Script for a particular user (or the Global Logon Script for all users.).

NOTE: No spaces are allowed when setting environment variables.

For example: To Activate Data Stream Encryption the following line should be present in the logon script.

`set gwtn_encrypt_session=1` is correct

`set gwtn_encrypt_session =` `1` is not correct

For example: To De-activate Data Stream Encryption the following line should be present in the logon script.

set gwtn_encrypt_session=0 is correct

Enable Encryption Server Registry variable

The variable `EnableEncryption` is a registry key value. This Registry key enables or disables the ability to activate Encryption. If it is disabled then all encryption environment variables are ignored. Also the client command line parameter **must not be used** when the registry value is disabled. The key is:

HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\GS_Tnet\Parameters\EnableEncryption

The default value is 0(That is disabled.) The value 1 enables the ability to use Encryption. The value 0 disables the ability to use encryption.

This is how to change the registry key for Encryption.

Note: (you must be on the Windows NT/XP/VISTA/2000/2003/2008 system that the Georgia SoftWorks Telnet Server is installed. However you may connect to the Windows NT/XP/VISTA/2000/2003/2008 Registry from a remote location).

1. Click the **Start** button at the bottom left corner of your screen.
2. Click **RUN**
3. Type `REGEDT32`
4. Click **OK**
5. Select Windows item **HKEY_LOCAL_MACHINE**
6. Select the menu item **Edit**
7. Move the mouse pointer and click **Find**
8. Type **`EnableEncryption`**
9. Click on **Find Next**
10. Select the menu item **Edit** and then click on **Modify**
11. Enter the new value for the `EnableEncryption` and click **OK**

The new EnableEncryption value will take effect for all new connections.

Proper Operating System DLL's

Encryption requires specific operating system Dll's (that are present on most systems) to exist to run the telnet client and server.

These files come with Windows NT 4.0/XP/VISTA/2000/2003 and are included in Microsoft Internet Explorer Version 3.0 and above. If you do not have these system files encryption will not operate.

If you have Windows 95 then you must have Windows 95 OSR2 or later (or Windows 95 with IE 3.02 or later). Windows 98 and newer versions have all the required files.

Georgia SoftWorks Telnet Server SE: 128-bit Strong Complete Data Stream Encryption.

Some applications require extremely strong Complete Data Stream Encryption. For these customers, Georgia SoftWorks offers their Telnet Server in a Strong Encryption (SE) version. This utilizes a full 128-bit data stream RSA encryption algorithm.

NOTE: 128-Bit Complete Data Stream is the default version when shipped on a CD.

The Georgia SoftWorks configuration needed to run the 128-bit encryption is the same as for the 40-bit encryption. The system requirements needed to run the encryption are slightly different. In order to run the 128-bit encryption the system requires either:

Server or Client Requirements

- Windows NT 4.0 with domestic version of SP 3 or domestic version of SP4 or
- Windows NT/XP/VISTA/2000/2003/2008

Additional Client Options

- Windows 95 with domestic version of Microsoft Internet Explorer 4.0. or
- Windows 98 with domestic version of Microsoft Internet Explorer 4.0.
- Windows ME with domestic version of Microsoft Internet Explorer 4.0

If you have further questions about of ensuring that you computer systems can accommodate 128-bit encryption please see the Microsoft Web site:

http://www.microsoft.com/windows/ie/download/128bit.htm

for further information.

Both the client and server must meet the system requirements for the SE version. Also both the Client and server must be of the SE version.

Encrypted Logon Sequence

You may choose to only encrypt the logon sequence when using the Georgia SoftWorks Telnet Client. This entails the same steps as described with Complete Data Stream encryption *except* there are no environment variables to set in the logon scripts.

Encryption Based on IP Address

In certain situations it may be desirable to have encryption enabled or disabled based on the IP Address of the connecting telnet session. Complete Encryption (both Logon and Data Stream) can be enabled/disabled based on the IP address using the configuration text file `gs_ipenc.txt`[10]. The Data Stream Encryption Client side parameter must also be used when configuring encryption based on IP addresses as described on page 78.

When configured the settings in the `gs_ipenc.txt` file overrides the normal encryption registry and environment settings.

The order of the fields in the `gs_ipenc.txt` file is as follows:

Field	Description
IP Address	The IP address/IP Address Range of the client
Enable or Disable Encryption Value	0=Disable, 1=Enable

Table 12 – Encryption based on IP Address - `gs_ipenc.txt` when using GSW Clients

For example the following entry in the file:

```
168.92.55.4 0
```

disables logon and session encryption for GSW Telnet Clients connecting from `168.92.55.4`

Another Example:

```
205.20.63.* 1
```

enables logon and session encryption for GSW Telnet Clients connecting from `205.20.63.*`

NOTE1: The IP address must start in the first column. IP Address Ranges and wildcards are allowed. Please see the file gs_ipenc.txt for further details.

NOTE2: For security reasons it is prudent to set the file `gs_ipenc.txt` to allow only SYSTEM – Read Access. NO other accounts should be allowed to access this file.

NOTE3: This feature is for power users that have a thorough understanding of the network and system security issues and topics.

[10] Located in the root installation folder of the GSW UTS Server.

Encryption – SSH2 Server

The GSW SSH2 Server offers very strong end-to-end encryption for all data. This includes the authentication and data stream. Please see the GSW SSH2 User Manual for more information on the SSH2 Server encryption.

Encryption – FIPS 140-2

A Federal Information Processing Standards Publication (FIPS) 140-2 compliant option is available and may be purchased for the GSW SSH2 Server. This standard specifies the security requirements that will be satisfied by a cryptographic module utilized within a security system protecting sensitive or valuable data. This option is available to Federal agencies, including the US Military. It may also be purchased by other organizations such as state governments, educational and research institutions, commercial businesses and other entities with the need or desire to comply with this security requirement for cryptographic modules standard. Please see the GSW SSH2 User Manual for more information on the SSH2 Server FIPS option.

When the FIPS 140-2 option is enabled on the GSW SSH2 server, FIPS 140-2 compliant connections can be identified by using the Session Administrator.

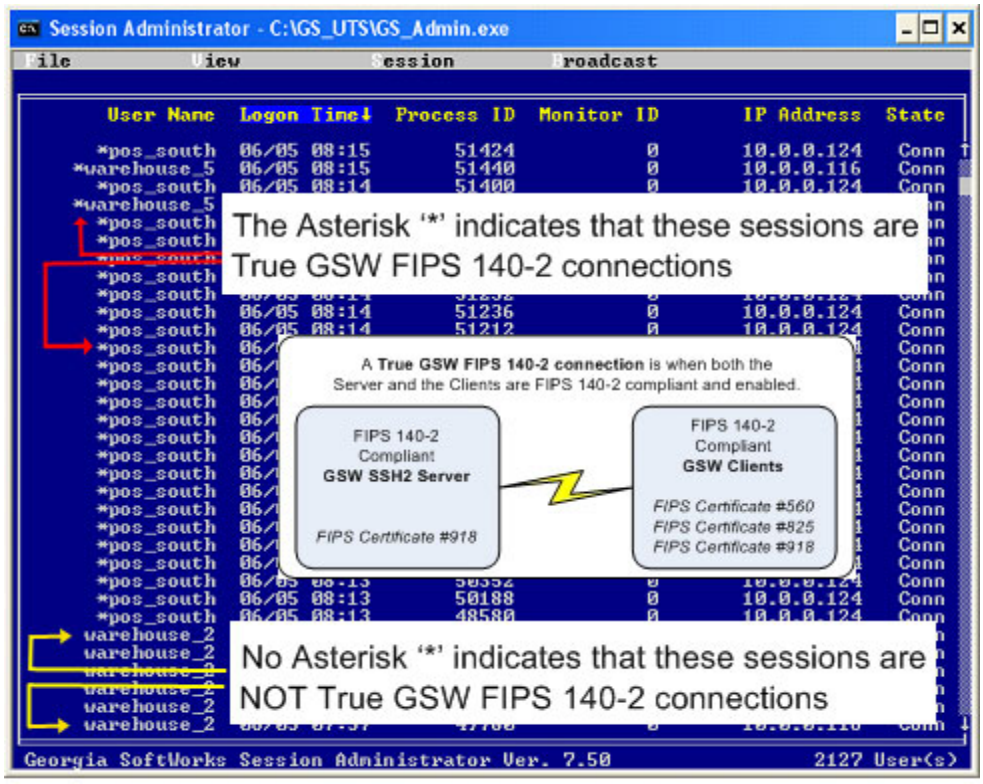

Session Administrator - C:\GS_UTS\GS_Admin.exe
File View Session Broadcast
User Name Logon Time Process ID Monitor ID IP Address State
The Asterisk '*' indicates that these sessions are True GSW FIPS 140-2 connections
A True GSW FIPS 140-2 connection is when both the Server and the Clients are FIPS 140-2 compliant and enabled.
FIPS 140-2 Compliant GSW SSH2 Server
FIPS Certificate #918
FIPS 140-2 Compliant GSW Clients
FIPS Certificate #560
FIPS Certificate #825
FIPS Certificate #918
No Asterisk '*' indicates that these sessions are NOT True GSW FIPS 140-2 connections
Georgia SoftWorks Session Administrator Ver. 7.50
2127 User(s)

Figure 52: Session Administrator view FIPS 140-2 sessions

A True GSW FIPS 140-2 connection is identified by an asterisk "*" prepended to the *username* in the session administrator. This means that a GSW FIPS 140-2 compliant client is connected to a FIPS 140-2 compliant server. Both ends are compliant and thus you can have confidence that this is a GSW True FIPS 140-2 compliant connection. Usernames without an asterisk "*"can not be confirmed as FIPS 140-2 compliant.

Connection Restrictions

The system administrator may restrict access to the SSH2/Telnet Server based on a variety of criteria advancing the level of security.

Restrict access based on User ID

The system administrator may optionally restrict connections via SSH2/Telnet based upon the *user id*. This is useful when you have a defined set of users that you would allow access to the Windows NT/XP/VISTA/2000/2003/2008 Server via SSH2/Telnet . If the system administrator decides to limit the users allowed to logon via SSH2/Telnet then the **local** group *Gwtn Users* must be created. If this group exists then only members of this group will be allowed to logon via SSH2/Telnet . If this group does not exist then all users that can logon locally can log on via SSH2/Telnet. Once the group *Gwtn Users* is created, each user allowed to logon via SSH2/Telnet must be added to this group[11]. You **will** have to restart the Windows NT/XP/VISTA/2000/2003/2008 server after creating the group and adding users. Windows NT/XP/VISTA/2000/2003/2008 does not instantaneously update the group membership after the user manager is closed.

Restrict access based on IP Address

The system administrator may optionally restrict connections via telnet based upon the Host IP address. Remote access may be limited only to specific IP addresses. The system administrator may also restrict specific IP addresses from connecting via SSH2/Telnet.

Restrictions based on IP address are enforced when the file `thosts` exists. The IP addresses of interest are listed in the `thosts` file. In short, only IP addresses listed in the `thosts` file are allowed to connect via telnet/SSH2. The provision also exists to exclude specific IP addresses from connecting via SSH2/Telnet. A keyword [Exclude] is used that indicates all IP Addresses listed in the file should be excluded from logon via SSH2/Telnet.

How to set up Host IP Address Restriction.
You must create the file:

```
thosts
```

The file must reside in the Georgia SoftWorks Universal Terminal Server installation directory. The directive [EXCLUDE] indicates if the IP Addresses should be excluded from connection.

NOTE: The System account must have permission to read the `thosts` file.

The rules are simple for setting up the `thosts` file.

1. It is a text file

2. The # character is the comment character

3. [EXCLUDE] directive placed in the 1st line will force the interpretation as the exclusion file, otherwise only IP addresses listed are allowed.

[11] Only Individual Users can be added to Gwtn Users. Groups can not be added to the group.

4. Data after the IP address is ignored and therefore can be used for additional comment data.

Following are example `thosts` files.

EXAMPLE - IP RESTRICTION: RESTRICT CERTAIN HOSTS FROM CONNECTING.

Bill and Tom have machines that are in a public location and are not secure. The system administrator does not want to allow SSH2/Telnet access from those machines. However Bill and Tom have other machines that need SSH2/Telnet access to the server. This is how to set up the thosts file to exclude those particular machines.

Information needed:

IP address of Bill's machine: 198.68.20.21

IP address of Tom's machines: 198.68.22.25

Edit the file `thosts` and add the following lines.

[EXCLUDE]

```
# Here is the list of hosts that are not allowed to log in via SSH2/Telnet
198.68.20.21          Bob's machine
198.68.22.25          Tom's machine
```

Now let's look at the contents of the file.

The [EXCLUDE] directive specifies that all IP addresses listed in the thosts file are no allowed to connect via telnet.

The next line is a comment reminding the System Administrator that the following Host IP addresses will not be allowed to connect via SSH2/Telnet .

Next is the list of Host IP addresses to exclude. The list can be as long as you desire.

EXAMPLE - RESTRICTION: ALLOW ONLY SPECIFIC HOSTS TO CONNECT

ACME Accounting has 3 remote locations. For the machines at each location there may be dozens of different users that may be connecting at different times of the day. The system administrator only wants to allow SSH2/Telnet connections from the 3 remote locations.

However the ACME remote Location 3 office is temporally closed and is under remodeling. Therefore the system administrator want to easily comment remove them from the "allowed" list and quickly add them back as soon as the office reopens.

Information needed:

IP address of ACME accounting location 1 machine: 198.68.35.21

IP address of ACME accounting location 2 machines: 198.68.35.25

IP address of ACME accounting location 3 machines: 198.68.35.26

Edit the file `thosts` and add the following lines.

```
# Here is the list of hosts that are allowed to log in via SSH2/Telnet
#
198.68.35.21          ACME accounting location 1 machine
198.68.35.25          ACME accounting location 2 machine
#Let's not allow location 3 until the office reopens.
#198.68.35.26          ACME accounting location 3 machine
#
```

Restrict users access to a specific application

The system administrator may optionally limit a user to run a specific application. This is accomplished using the `c_start.bat` file logon scripting technique. A detailed example and description is on page 159.

Restrict connections from 3rd Party Clients

This feature allows connections only from the Georgia SoftWorks SSH2/Telnet Client. This is another level of security that the system administrator can configure. Many times the system administrator will not want users using any generic client to connect to his or her system.

The variable `EnableRFC854Clients` is a registry key value. This Registry key enables or disables the ability to restrict connection from 3rd party clients. If it is disabled then only users using the Georgia SoftWorks SSH2/Telnet client are allowed to connect. The key is:

HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\GS_Tnet\Parameters\EnableRFC854Clients

The default value is 1(That is enabled.) The value 1 enables the ability for connection from all telnet/SSH2 clients. The value 0 restricts connection to the Georgia SoftWorks Telnet/SSH2 client.

This is how to change the registry key for 3rd Party Client Restriction.

Note: (you must be on the Windows NT/XP/VISTA/2000/2003/2008 system that the Georgia SoftWorks Windows UTS is installed. However, you may connect to the Windows NT/XP/VISTA/2000/2003/2008 Registry from a remote location).

1. Click the **Start** button at the bottom left corner of your screen.
2. Click **RUN**
3. Type `REGEDT32`

4. Click **OK**

5. Select Windows item **HKEY_LOCAL_MACHINE**

6. Select the menu item **Edit**

7. Move the mouse pointer and click **Find**

8. Type **EnableRFC854Clients**

9. Click on **Find Next**

10. Select the menu item **Edit** and then click on **Modify**

11. Enter the new value for the EnableRFC854Clients and click **OK**

The new value will take effect for all new connections.

Restrict access based the number of connections

This feature specifies the total number of connections allowed. This is another level of security that the system administrator can configure. Many times the system administrator may want to limit the total number of connections to be a smaller value than the number of connections purchased.

The variable MaxSessions is a registry key value. This Registry key enables or disables the ability to restrict connection to the number of sessions specified. If it is disabled (0xffffffff) then all of the sessions purchased are available, otherwise then the MaxSessions Registry value is compared to the number of sessions purchased. The smaller of the two numbers is used as the number of sessions to allow. The key is:

HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\GS_Tnet\Parameters\MaxSessions

The default value is 0xffffffff(That is disabled). Other values limit the number of connection allowed to the value chosen.

This is how to change the registry key to limit the number of connections.

Note: (you must be on the Windows NT/XP/VISTA/2000/2003/2008 system that the Georgia SoftWorks Universal Terminal Server is installed. However, you may connect to the Windows NT/XP/VISTA/2000/2003/2008 Registry from a remote location).

1. Click the **Start** button at the bottom left corner of your screen.

2. Click **RUN**

3. Type REGEDT32

4. Click **OK**

5. Select Windows item **HKEY_LOCAL_MACHINE**

6. Select the menu item **Edit**

7. Move the mouse pointer and click **Find**

8. Type **MaxSessions**

9. Click on **Find Next**

10. Select the menu item **Edit** and then click on **Modify**

11. Enter the new value for the MaxSessions and click **OK**

The new value will take effect for all new connections.

Restrict Number of connections by a Specific User ID

The system administrator may want to limit the number of simultaneous logons for specific User Ids. This is especially useful for ASP environments where an entire company, department or group is assigned a single User Id that everyone shares. The system administrator may want to limit the number of simultaneous connections for that company for a variety of reasons that range from server resource allocation to purchased access.

Restrictions based on the number of User Id sessions are enforced when the file gs_l_usr.txt exists. The User Id's with connection restrictions counts are listed in the gs_l_usr.txt file. For each entry in the gs_l_usr.txt file two fields are specified: The User ID and the Count.

How to set up User ID Count Restriction

Notice the file in the GSW UTS installation directory:

gs_l_usr.txt

The file must reside in the Georgia SoftWorks Universal Terminal Server installation directory.

NOTE: The System account must have permission to read the gs_l_usr.txt file.

This file is used for configuration of the User ID Count Restrictions.

The rules are simple for setting up the gs_l_usr.txt file.

- It is a text file
- The # character is the comment character
- Each entry must start in the first column.
- Each entry consists of the User ID and the Count
- The User ID and the Count are separated by a single space

Following is an example for using the gs_l_usr.txt file.

EXAMPLE – USER ID COUNT RESTRICTION

ACME ASP is an Application Service Provider (ASP) where they have a Specialized Database Lookup Application (SDLA) located on a server at their headquarters. They sell access to the SDLA to companies where pricing is based on the number simultaneous connections. Each company accesses the SDLA via the Internet from undetermined or varying locations. Each company that purchases access to the SDLA is provided a User ID on the ACME server, that everyone from their company shares.

Currently AMCE has sold access to the SDLA to six companies. Four companies purchased three connections each; the remaining two companies purchased twelve connections each.

ACME only wants to restrict each company to the number of sessions that they have purchased.

The ACME System Administrator can configure the gs_l_usr .txt file that specifies the number of sessions allowed for each User ID.

The Information for each company is:

Company Name	User Id Assigned to Company	Number of Concurrent Sessions
BigBrain Intelligence	**bbrain**	**12**
Vigorous Investments	**viginv**	**3**
Sweet Apple Suppliers	**sweeta**	**3**
Warehouse Storage	**warstore**	**3**
Sure Shipping Co	**surship**	**3**
Wireless Security	**Wiresec**	**12**

Figure 53: Security: Restriction based on User ID Count.

This is how to set up the gs_l_usr.txt file to limit the number of connections for each company.

Edit the file `gs_l_usr.txt` and add the following lines. (Be sure to start in column one)

```
bbrain 12
viginv 3
sweeta 3
warstore 3
surship 3
Wiresec 12
```

Each time a logon request occurs the GSW Universal Terminal Server determines the number of active sessions associated with that User ID. If the count of active sessions exceeds the configured count in the `gs_l_usr.txt` file then the logon is denied.

A sample `gs_l_usr.txt` file with examples is installed with the software. It can be easily modified and used for your purposes.

Restrict Number of connections from a Specific IP-Address

The system administrator may want to limit the number of simultaneous logons from specific IP Addresses. This is especially useful for ASP environments where many users access the GSW UTS from locations that can be identified by a specific IP Address. The system administrator may want to limit the number of simultaneous connections for a variety of reasons that range from server resource allocation to purchased access.

Restrictions based on the number of sessions originated from specific IP Addresses are enforced when the file `gs_l_ip.txt` exists. IP Addresses with connection restrictions counts are listed in the `gs_l_ip` file. For each entry in the `gs_l_ip` file two fields are specified: The IP Address and the Count.

How to set up IP Address Count Restriction.
Notice the file in the GSW UTS installation directory:

`gs_l_ip.txt`

The file must reside in the Georgia SoftWorks Windows Universal Terminal Server installation directory.

NOTE: The System account must have permission to read the `gs_l_ip.txt` file.

The file `gs_l_ip.txt` is used for configuration of the IP Address Count Restrictions.

The rules are simple for setting up the `gs_l_ip.txt` file.

- It is a text file
- The # character is the comment character
- Each entry must start in the first column.
- Each entry consists of the IP Address (or IP Address Range) and the Count.
- The IP Address and the Count are separated by a single space.

Following is an example for using the `gs_l_ip.txt` file.

EXAMPLE – IP ADDRESS COUNT RESTRICTION

ACME ASP is an Application Service Provider where they have a Medical Database Lookup Application (MDLA) located on a server at their headquarters. They sell access to the MDLA based to companies where pricing is based on the number simultaneous connections. Due to the sensitive nature of Medical information access is only granted from specific locations that can be associated with known IP Addresses. In addition, each User has access to private medical information based on their User ID. The typical ACME customer may have 300 users that need access to the MDLA but no more than 20 will be using the system at any given time.

Currently AMCE has sold access to the MDLA to 4 companies. Two companies purchased twenty connections each; the remaining two companies purchased twenty-five connections each.

ACME only wants to restrict each company to the number of sessions that they have purchased.

The ACME System Administrator can configure the `gs_l_ip.txt` file that specifies the number of sessions allowed for each User ID. The Information for each company is:

Company Name	IP Address or Range		Number of Concurrent Sessions
Heath Matters Inc.	**192.71.34.107**		**20**
Live Long Insurance	**170.40.255.231**		**25**
Grow Tall Pharmaceutical (They want access from any the following IP Addresses to work.)	164.10.15.210 164.10.15.211 164.10.15.212 164.10.15.213 164.10.15.214 164.10.15.215 164.10.15.216 164.10.15.217 164.10.15.218 164.10.15.219	164.10.15.220 164.10.15.221 164.10.15.222 164.10.15.223 164.10.15.224 164.10.15.225 164.10.15.226 164.10.15.227 164.10.15.228 164.10.15.229 164.10.15.230	**20**
Sharp Doctors for You (Sharp Doctors for You has a large range of IP Addresses that are valid.)	205.20.63.0 Through 205.20.63.255		**25**

Figure 54: Security: Restriction based on Count. from IP Address

This is how to set up the `gs_l_ip.txt` file to limit the number of connections for each company.

Edit the file `gs_l_ip.txt` and add the following lines.

```
192.71.34.107 20
170.40.255.231 25
164.10.15.210-164.10.15.230 20
205.20.63.* 25
```

Each time a logon request occurs the GSW Universal Terminal Server determines if the number of active sessions associated with that the originating IP Address. If the count of active sessions exceeds the configured count in the `gs_l_ip.txt` file then the Logon is denied.

Note 1: *An Address range is specified in line 3*

```
164.10.15.210-164.10.15.230 20
```

This translates to include all IP Addresses between:

164.10.15.**210** and 164.10.15.**230**

Note 2: *An Address Wilde Chard is specified in line 4*

```
205.20.63.* 25
```

This translates to include all IP Addresses no matter what the values for the last field. The list below helps visualize the IP addresses included.

```
164.10.63.0
164.10.63.1
164.10.63.2
…
164.10.63.253
164.10.63.254
164.10.63.255
```

A sample `gs_l_ip.txt` file with examples is installed with the software. It can be easily modified and used for your purposes.

Restrict connection to only encrypted sessions - Telnet

This feature allows connections only from the encrypted Georgia SoftWorks Telnet Client. This is another level of security that the system administrator can configure. Many times the system administrator wants to ensure that ALL connections to the GSW UTS are encrypted.

Note: This feature is only relevant for Telnet. By the nature of SSH2 all connections are encrypted.

The variable `RequireEncryptedSession` is a registry key value. This Registry key enables or disables the ability to restrict encrypted only sessions. If it is disabled then only users using the Georgia SoftWorks Telnet client are allowed to connect. The key is:

HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\GS_Tnet\Parameters\RequireEnctyptedSession

The default value is 0(Disabled.) The value 1 only allows encrypted session to connect. The value 0 allows both encrypted and un-encrypted sessions to connect to the Georgia SoftWorks Telnet client. This value must be left set to 0 (the default) if running the GSW SSH2 Server.

*Use of this feature **overrides** user settings in the logon script and force clients to use encrypted session data stream.*

Please make sure the registry parameter:

EnableEncryption

is set to 1 and that the Georgia SoftWorks Telnet Client uses the `/c` command line option.

After you complete your settings you will notice the following:

a. 3rd party clients will report disconnected session before the user even tries to type his logon name.

b. GS clients which do not have `/c` option will fail to connect.

This is how to change the registry key for connection by only Encrypted Sessions.

Note: (you must be on the Windows NT/XP/VISTA/2000/2003/2008 system that the Georgia SoftWorks Windows UTS is installed. However you may connect to the Windows NT/XP/VISTA/2000/2003/2008 Registry from a remote location).

1. Click the **Start** button at the bottom left corner of your screen.
2. Click **RUN**
3. Type `REGEDT32`
4. Click **OK**
5. Select Windows item **HKEY_LOCAL_MACHINE**
6. Select the menu item **Edit**
7. Move the mouse pointer and click **Find**

8. Type **RequireEncryptedSession**

9. Click on **Find Next**

10. Select the menu item **Edit** and then click on **Modify**

11. Enter the new value for the RequireEncryptedSession and click **OK**

Expired Password Handling

The Georgia SoftWorks Universal Terminal Server has *pioneered* and introduced another expected but missing feature in the Windows NT/XP/VISTA/2000/2003/2008 world. Typically when a user password is expired connections are simply refused by Windows SSH2/Telnet servers. This is not the case with the Georgia SoftWorks Universal Terminal Server. The user is prompted for the new password just as if they were logged on locally to the Windows NT/XP/VISTA/2000/2003/2008 Server.

Integrated with Windows NT/XP/VISTA/2000/2003/2008 Security

The Georgia SoftWorks Universal Terminal Server for Windows is integrated with Windows NT/XP/VISTA/2000/2003/2008 security, adhering to the native security already existing on Windows.

Performance Pack

The Georgia SoftWorks SSH2/Telnet Server is the *fastest* SSH2/Telnet Server available for Windows NT/XP/VISTA/2000/2003/2008 . The Georgia SoftWorks UTS is designed to work in the most demanding industrial and commercial applications. This means that it must have reliable and consistent operation all of the time. It does not matter if there is one connection or 100 connections. It is dependable, reliable, consistent and robust.

Speed Pack	Configurable	Georgia SoftWorks Client	3rd Party Client
Fast, Fast, Fast!		Yes	Yes
Compression for slow speeds	N/A	Yes	No
Slow Link, Internet Support	N/A	Yes	Yes
Proprietary performance algorithms	N/A	Yes	Yes
Proprietary code optimizations	N/A	Yes	Yes
DOSBOSS - MS DOS application performance booster!	Yes	Yes	Yes
Automatic Logon	Yes	Yes	Yes (page 129)
GSW UTS x64 native 64-Bit Software	N/A	N/A	N/A
RF DTIO Interface	Yes	Yes	Yes

Table 13 - Speed Pack

Fast, Fast, Fast

The Georgia SoftWorks UTS provides incredibly fast screen updates, in fact the fastest on the market. Several optimizations have been implemented with respect to screen updates. Fox example when data is sent from the server to the client only the screen data that has changed is sent.

Keyboard response is also incredibly fast. When you type a character, it is displayed immediately. A fast typist will have to work hard to outrun the keyboard response of the Georgia SoftWorks Universal Terminal Server.

Compression for slow link speeds

The Georgia SoftWorks Universal Terminal Server for Windows NT/XP/VISTA/2000/2003/2008 compresses data to increase the overall throughput of data. *Incredible* performance optimizations are utilized when using the Georgia SoftWorks SSH2/Telnet Clients.

Slow link and Internet optimizations

Many access the host system via slow dialup links or by the Internet. Significant performance optimizations are realized when using any SSH2/Telnet client.

Proprietary performance algorithms and code optimizations.

To accomplish the desired performance, the GSW SSH2/Telnet Server designers used object oriented C++ for the foundation of the software, providing a modular and easily extensible and maintainable design. In addition to sophisticated performance algorithms, all time critical sections of the software are written in highly optimized C code.

DOSBoss MSDOS Application performance booster.

The Georgia SoftWorks DOSBoss **dramatically** improves system performance in situations when MSDOS applications are running under Microsoft Windows NT. In fact some say it is incredible!

Many MSDOS applications run under Windows NT/XP/VISTA/2000/2003/2008 but do not perform well, especially when multiple instances of them are being used at the same time (This is without SSH2/Telnet in the picture). This is because MSDOS applications do not know about Windows NT/XP/VISTA/2000/2003/2008 and assume they are the only application(s) running on the computer. As a result the MSDOS applications are not always Windows NT/XP/VISTA/2000/2003/2008 friendly.

For example, Start 3 instances of the Microsoft Edit program in 3 separate command prompt windows. Next start the Performance monitor. You will notice the CPU usage is very high even though you are not actively using the editors. Your computer does not perform well when the CPU usage is high. This problem occurs with many MSDOS applications.

To enable the Georgia SoftWorks DOSBoss put the following line at the beginning of your logon script:

```
<telnet_dir>\dosboss
```

where <telnet_dir> stands for the Georgia SoftWorks Telnet Server Directory, for example:

```
c:\gs_uts\dosboss
```

The above activates the DOSBoss with default parameters that satisfies most users requirements.

Note for power users

You can specify additional command line parameters for the DOSBoss. Valid command lines are:

`/cnn` - specifies the count of time slices to release. Default is `/c3`.

In the case where DOSBoss is already loaded the installed instance will change its parameter(s) to the new value(s).

`/h` - to display the help message

`/r` - uninstall the resident part of the program (Do not use with `/c` option)

`/s` - show statistics of the resident portion (DOSBoss must be loaded first)

Examples:

```
DOSBoss /c5 /s          ' Set time slices to release to 5, dump statistics
DOSBoss /r /s           ' uninstall the DOSBoss, dump statistics.
DOSBoss /h                      ' display the help message
```

Automatic Logon – Autologon

This feature allows you to pre-configure a list of IP addresses that will be able to connect and log on without any User ID, Password or Domain prompting when using the *Georgia SoftWorks SSH2/Telnet Clients or 3rd Party Clients*.

Autologon is useful in many situations; however the real power of this feature is realized when coupled with the Session Saver (page 102) for fast and easy connection establishment. For example when a connection is broken due to a link failure you can reconnect without the time consuming UserID, Password and Domain prompts and resume work exactly where you left off before the link failure.

The configuration procedure for Automatic Logon is different for GSW Clients and Third Party Clients. A list of IP address can be associated with either GSW Clients or 3rd Party Clients but NOT both.

Automatic Logon for GSW Clients is configured using the `gs_auto.txt` file. Automatic Logon for Third Party Clients is configured using the `gs_logon.txt` file. The format of the files is exactly the same but it is important to remember which files are used for each client type.

Note: An IP address **cannot** be associated with **both** a **GSW Client** **and a** **Third Party Client**. No overlap between IP Address ranges defined in the `gs_auto.txt` and `gs_logon.txt` is allowed. Unpredictable results will occur.

Autologon with GSW Clients

For correct operation of the AutoLogon feature when using the Georgia SoftWorks SSH2/Telnet Client two steps must occur.

First, the Georgia SoftWorks Telnet/SSH2 Client must be enabled for automatic logon.

- GSW **Desktop** Clients – Automatic Logon is enabled using the command line parameter **`-a`** when initiating the client (See page 66).

- GSW **Mobile** Clients – Automatic Logon is enabled by checking the Autologon checkbox on the Session `|Settings|Session` menu options. (see page 37)

Second, a server side configuration text file is used for specifying the IP address that will autologon. The name of the file for the Georgia SoftWorks SSH2/Telnet Client is `gs_auto.txt` and is installed in the GSW UTS Root Directory. All Clients connecting with IP addresses specified in the `gs_auto.txt` file must be GSW Clients AND the IP Addresses CAN NOT also be used in the 3rd Party Automatic Logon configuration text file. No overlap between IP Address ranges defined in the gs_logon.txt and gs_auto.txt is allowed.

The order of the fields in the `gs_auto.txt` file is as follows:

Field	Description
IP Address	The IP address of the client
Domain	Specify the dot '.' character if no domain is used.
User Name	The User ID for the connection
Password	The Password

Table 14 – Automatic Logon Specifications `gs_auto.txt` when using GSW Clients

An IP address can be associated to *autologon* with a **Georgia SoftWorks** OR a **3rd Party Client** but **NOT both**. No overlap between IP Address ranges defined in the `gs_auto.txt` and `gs_logon.txt` is allowed.

For example the following entry in the file:

```
63.80.112.70 . rayr  sharpbook
```

Instructs the system that when a user connects from the IP Address `63.80.112.70` that the connection should be authenticated as `'./rayr'` with the password set to '`sharpbook`'.

The '#' character in the first column designates a comment line.

NOTE1: The IP address must start in the first column. IP Address Ranges and wildcards are allowed.

NOTE2: For security reasons it is prudent to set the file `gs_auto.txt` to allow only SYSTEM – Read Access. NO other accounts should be allowed to access this file.

NOTE3: The format of this file is the same as `gs_logon.txt`, the automatic logon configuration file used with 3rd party clients. Only the name of the file is different.

Automatic Logon 3rd Party Clients

This feature allows you to pre-configure a list of IP addresses that will be able to connect and log on without any User ID, Password or Domain prompting when using 3rd Party Clients.

Autologon is useful in many situations; however the real power of this feature is realized when coupled with the Session Saver (page 102) and/or used with RF Data collection devices for fast and easy connection establishment. For example when a connection is broken due to a link failure you can reconnect without the time consuming UserID, Password and Domain prompts and resume work exactly where you left off before the link failure.

A server side text file is used for specifying the IP addresses that will autologon. The name of the file is `gs_logon.txt` and is installed in the UTS Root Directory. No client configuration is required for 3rd party clients.

The order of the fields in the **`gs_logon.txt`** file is as follows:

Field	Description
IP Address	The IP address of the client
Domain	Specify the dot '.' character if no domain is used.
User Name	The User ID for the connection
Password	The Password

Table 15 - Automatic Logon Specifications `gs_logon.txt` when using 3rd Party Clients

An IP address can be associated to *autologon* with a Georgia SoftWorks **OR** a 3rd Party Client but **NOT both**. No overlap between IP Address ranges defined in the `gs_logon.txt` and `gs_auto.txt` is allowed.

For example the following entry in the file:

```
63.80.112.70 . rayr  sharpbook
```

Instructs the system that when a user connects from the IP Address 63.80.112.70 that the connection should be authenticated as `'./rayr'` with the password set to '`sharpbook`'.

The '#' character in the first column designates a comment line.

NOTE1: The IP address must start in the first column. IP Address Ranges and Wildcards are allowed.

NOTE2: For security reasons it is prudent to set the file gs_logon.txt to allow only SYSTEM – Read Access. NO other accounts should be allowed to access this file.

NOTE3: The format of this file is the same as `gs_auto.txt`, the automatic logon configuration file used with the Georgia SoftWorks Telnet/SSH2 clients. Only the name of the file is different.

Automatic Logon Summary

Automatic Logon requires Server Side Configuration and Client Side Configuration for GSW Clients.

Server Side Configuration		
	Automatic Logon Configuration File on Server	
	GSW Client	Third Party Client
Edit specific Server File that contains Automatic Logon Information	`gs_auto.txt`	`gs_logon.txt`

Table 16 - Automatic Logon Configuration Files

Client Side Configuration for Automatic Logon

Client Side Configuration		
GSW Desktop Client	GSW Mobile Client	Third Party Client
Add the command line parameter **`-a`** when initiating the client (page 66). This tells the client not to send logon information to the server.	Check the Box in the configuration options screen (page 37).	None Required

Example in the `GS_SClnt.bat` file
 	
`@echo off`
`:start`
`@if exist once1.bat do call once1.bat`
`@if exist once1.bat do del once1.bat`
 	
`@gs_clnt.exe -a`
 	
`if errorlevel 2 goto copy`
`@exit`
`:copy`
`@copy gs_clnt.new gs_clnt.exe > gsnull.txt`
`@if exist once2.bat do call once2.bat`
`@if exist once2.bat do del once2.bat`
`@goto start`		

Table 17 - Automatic Logon Client Side Configuration

GSW UTS x64 Native 64-Bit

Georgia SoftWorks created a native build optimized for 64-bit platforms. Indeed many 32-bit applications will run on a 64-bit platform including the standard GSW UTS, but our philosophy of continuous improvement demands that we put forth the effort to make the software native on the powerful 64-bit platform. This eliminates potential compatibility issues of non-native code running while taking full advantage of the performance and addressing opportunities afforded by the 64-bit platform.

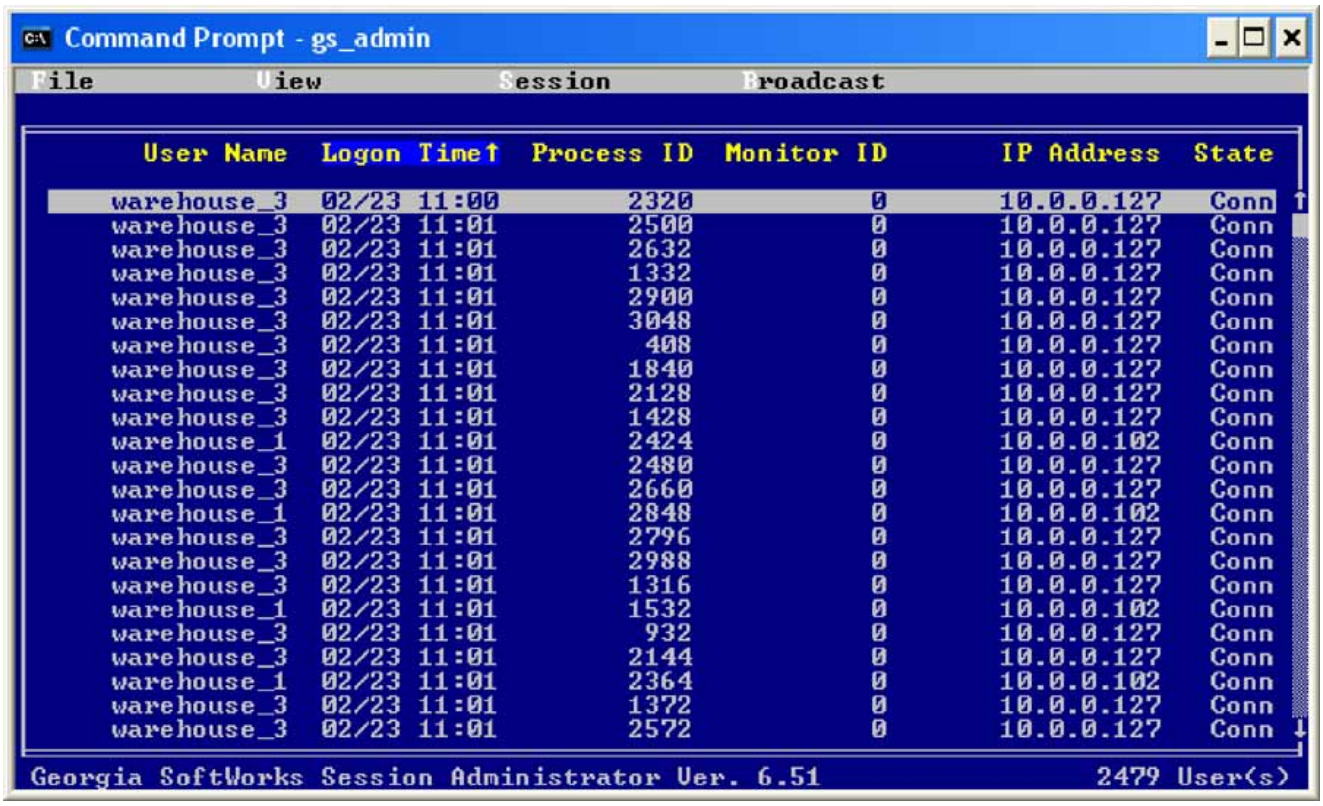


Figure 55: Extraordinary High Session Count

The above is a screen shot of gs_admin when GSW Engineering performed burst connection testing with the GSW UTS x64. This is where hundreds of connections are initiated rapidly over and over taxing the system until several thousand connections are maintained. Even though this test goes beyond what is considered real world it provides information as to the benefits of a 64-bit system as well as the glimpse of the extensive testing performed to ensure the GSW UTS meets and exceeds the demands of commercial environments. At this point in testing GSW UTS x64 the screen shot was taken from GS_Admin with over 2400 connections.

This particular test was performed on a modest 2 GHz dual processor Xeon with 2 GB RAM.

RF DTIO Interface

The GSW UTS has a built in interface to work with the GSW RF Directed Terminal Input/Output Engine. The GSW Directed Terminal I/O Engine is an add-on component that intercepts a specific set of terminal input/output operating system calls initiated by your application and directs terminal I/O through a specialized high performance interface within the GSW Universal Terminal Server (UTS).

A new performance standard is realized when using the GSW Directed Terminal I/O Engine with the GSW UTS for Windows. Large systems will experience a dramatic performance improvement as well as a substantial increase in the number of sessions on a server.

The GSW DTIO Engine is specialized software, focused on a narrow set of goals. The objectives are to provide significant performance improvements and a higher number of sessions on a server than previously possible due to processing bottlenecks and CPU Limitations

Please visit the GSW website for more information on the GSW RF DTIO Engine.

Failure Detection/Recovery Pack

For Industrial applications excellent failure detection and recovery is expected and required. This is one area that separates the toys from the tools. *Georgia SoftWorks **pioneered** every feature listed on this page.* Some have been copied but none have been equaled. The ability to operate in industrial and commercial environments was a design goal from the beginning not an afterthought. Commercial applications require that remote link, PC and Client failures be detected and handled as to not impact the other users of the system.

Failure/Recovery Pack	Configurable	Georgia SoftWorks Client	3rd Party Client
Session Saver	Yes	Yes	Yes
Complete Session Cleanup	Yes	Yes	Yes
Complete NTVDM Cleanup	Yes	Yes	Yes
Server Side Inactivity Timer	Yes	Yes	Yes
Server Side Heartbeat	Yes	Yes	Yes
Client Side Heartbeat	Yes	Yes	No
Graceful Termination of DOS Applications	Yes	Yes	Yes
Termination Scripts	Yes	Yes	Yes
Termination of Child Processes	Yes	Yes	Yes

Table 18 - Failure/Recovery Pack

Session Saver

Georgia SoftWorks has again pioneered another outstanding feature for NT/XP/VISTA/2000/2003/2008 Servers. This feature Saves the Telnet/SSH2 Session in the event of a link or client failure and allows users to reconnect to the same session the next time they log in and *resume the work in progress, exactly where they left off.* Extremely useful when connectivity is across the Internet or with Radio Frequency Barcode/Scanner applications where it is important to continue work in progress, even after a connectivity failure. If a reconnection is not performed within a specified time period then Graceful Termination will initiate. For the fastest reconnection and minimal prompting you may want to couple the Session Saver with AutoLogon (page 129). Especially useful in RF Data collection applications.

Upon a client or link failure, the SSH2/Telnet session and associated NTVDM are normally terminated eliminating any orphaned sessions. This is the default behavior. However there are times when it may be desirable to *Save the Session* giving the user the opportunity to reconnect to the session to resume work in progress. This session is termed to be *Saved* or *Suspended*[12]. This feature can be enabled as described below.

Two methods exist to connect to a Suspended session. They are the *Session Reconnect Method* and the *Attach Method.*

The Session Reconnect Method is defined to automatically recognize when a User or User from a specific IP address is Logging In and to determine if they have any Saved or Suspended sessions. If so, then the telnet/SSH2 server will automatically reconnect the user to their existing *Saved Session.*

[12] These terms are used interchangeably

The *Attach Method* is defined to allow a User that is a member of the **Gwtn Monitors** group to identify any Suspended sessions and to Attach (connect) to that session. Please see the Session Monitor for more information on this method (page 131).

The Session Reconnect method can be configured on either a global or per user basis by utilizing Logon Scripts (page 158). Two environment variables are used in configuring the Session Reconnect.

The environment variables for the Session Reconnect are:

gwtn_reconnect

Possible values are

- **auto_by_user_and_ip** - Reconnect based on User Id and IP Address
- **auto_by_user** - Reconnect based upon User Id

And

gwtn_reconnect_timeout

specifies time in minutes for how long broken sessions will wait for the original user to reconnect. This variable does not have to be set, the default value is 0. It must be set to non-zero for Session-Reconnection to operate.

Note: The User should be using the same terminal emulation during a reconnect that they were using when the failure occurred.

Session Reconnection Timeout

A system administrator may not want Suspended sessions to stay around indefinitely. The amount of time in minutes that a user's session can be available for Session Reconnection is specified by the environment variable **gwtn_reconnect_timeout.** Once this timer has expired for a user then Graceful Termination initiates.

This environment variable must to be set because the default is 0 minutes, which is disabled. This environment variable is ignored if the **gwtn_reconnect** environment variable is not set.

For example to set the Session Reconnection Time to 1 hour you would enter:

```
set gwtn_reconnect_timeout=60
```

in the Logon Script for a particular user.

NOTE: No spaces are allowed when setting environment variables.

For example:

`set gwtn_reconnect_timeout=60` is correct

set gwtn_reconnect_timeout = 60 is not correct

Reconnection based on User ID.

Let's look at an example. User "Bob" is using a RF Hand Held terminal and is performing a multi-point inspection of an item. Bob is navigating though many screens, logging data during the inspection. Half way

through the inspection the Hand Held terminal fails. It would be great if Bob could simply grab a spare Hand Held Terminal, log in and continue his work in progress.

This is possible with Reconnection based on User ID. The SSH2/Telnet server will determine if there are any Suspended sessions for user Bob. If there are Suspended sessions then the SSH2/Telnet server will automatically connect Bob to the existing session. The screen will be exactly in the same condition as it was when Bob was previously connected and Bob can continue work in progress!

For example to enable Session Reconnection you would enter:

```
set gwtn_reconnect=auto_by_user
```

in the Logon Script for a particular user.

NOTE: No spaces are allowed when setting environment variables.

For example:

`set gwtn_reconnect=auto_by_user` is correct

`set gwtn_reconnect = auto_by_user` is not correct

Reconnection based on IP Address and User ID.

There may be times when you have permanent IP addresses and you only want users from machines at those locations to be able to reconnect to Suspended sessions for security or other reasons. In this situation you may consider reconnection based on IP address AND User Id.

Let's look at an example. User "Jane" is using a Medical Application from a secure location. The medical application can only be used at this specific location for security reasons. She is almost complete entering a new patient when a circuit breaker trips. It would be nice if when the circuit breaker was reset she could login and automatically continue her work in progress.

This is possible with Session Reconnection based on IP Address and User ID. The SSH2/Telnet server will determine if there are any Suspended sessions for user "Jane" from the IP address from which she is connecting. If there are Suspended sessions for that user AND that IP address then the SSH2/Telnet server will automatically connect Jane to the existing Saved session. The screen will be exactly in the same condition as it was Jane was last connected and she can continue her work in progress!

For example to enable this type of Session reconnection you would enter:

```
set gwtn_reconnect=auto_by_user_and_ip
```

in the Logon Script for a particular user.

NOTE: No spaces are allowed when setting environment variables.

For example:

`set gwtn_reconnect=auto_by_user_and_ip` is correct

`set gwtn_reconnect = auto_by_user_and_ip` is not correct

Complete Session Cleanup

The Georgia SoftWorks UTS for Windows NT/XP/VISTA/2000/2003/2008 provides features that ensure that all SSH2/Telnet sessions are properly terminated, even during abnormal client and link failures. Many internal session cleanup methods are automatic; others are configurable using the different Inactivity and Heartbeat timers, termination strings and scripts. Properly terminating telnet sessions ensure that all sessions are available for use and that problems do not accumulate over a long term.

Complete NTVDM Cleanup

The Georgia SoftWorks Universal Terminal Server has employed very complex and sophisticated proprietary algorithms to detect, identify and eliminate "orphaned" NTVDM's[13] directly initiated by applications when using SSH2/Telnet. In many cases orphaned NTVDM's or processes can consume all of the server's processing power rendering the server crippled or useless. Realizing that NTVDM cleanup is essential in industrial, commercial and mission critical applications, a great amount of design and development resources were expended to ensure proper operation in this area.

Server Side Inactivity Timer

Server Side Inactivity Timer allows implementing an optional administrative policy to terminate sessions after a period of inactivity.

Note: For RF Users with devices that have *Power Save* or *Sleep Mode* enabled please see page 185 for suggested settings.

For example; ACME Company purchased Georgia SoftWorks Telnet Server with a single session. User Bob connects a session locks his office and goes home. No one else can connect due to the licensing limit.

If data (keyboard or mouse events) is not received from a client within the specified server side inactivity time then the client session is terminated. This feature is useful to ensure that an abandoned 3rd party client session is terminated properly, releasing the telnet session for others to use. The Server Side Inactivity Timer is used *only* if the *client* side heartbeat is not used.

This timer is a registry key value and is in seconds. The key is:

HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\GS_Tnet\Parameters\InactivityTimeout

The default value is 0xffffffff that is -1. (That is disabled.)

This is how to change the registry key for the Server Side Inactivity Timer.

Note: (you must be on the Windows NT/XP/VISTA/2000/2003/2008 system that the Georgia SoftWorks UTS for Windows NT/XP/VISTA/2000/2003/2008 is installed. However you may connect to the Windows NT/XP/VISTA/2000/2003/2008 Registry from a remote location).

1. Click the **Start** button at the bottom left corner of your screen.
2. Click **RUN**

[13] Please see the discussion on NTVDM's on page 229.

3. Type `REGEDT32`
4. Click **OK**
5. Select Windows item **HKEY_LOCAL_MACHINE**
6. Select the menu item **Edit**
7. Move the mouse pointer and click **Find**
8. Type **`InactivityTimeout`**
9. Click on **Find Next**
10. Select the menu item **Edit** and then click on **Modify**
11. Enter the new value for the InactivityTimeout and click **OK**

The new InactivityTimeout will take effect for all new connections that do not have a client heartbeat configured.

Server Side Heartbeat Timer

The *Server Side Heartbeat Timer* is used for setting the frequency in seconds which to poll the 3rd party client for presence. If the client is not present then Graceful Termination is initiated.

This timer is a registry key value and is in seconds. The key is:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\GS_Tnet\Parameters\ClntChkTimeout
```

The default value is 30. (That is 30 seconds)

You may disable this timer by setting it to `0xffffffff`.

Note: For RF Users with devices that have *Power Save* or *Sleep Mode* enabled please see page 185 for suggested settings.

This is how to change the registry key for the Server Side Heartbeat Timer.

Note: (you must be on the Windows NT/XP/VISTA/2000/2003/2008 system that the Georgia SoftWorks UTS for Windows is installed. However you may connect to the Windows NT/XP/VISTA/2000/2003/2008 Registry from a remote location).

1. Click the **Start** button at the bottom left corner of your screen.
2. Click **RUN**
3. Type `REGEDT32`
4. Click **OK**
5. Select Windows item **HKEY_LOCAL_MACHINE**
6. Select the menu item **Edit**
7. Move the mouse pointer and click **Find**
8. Type **`ClntChkTimeout`**
9. Click on **Find Next**
10. Select the menu item **Edit** and then click on **Modify**
11. Enter the new value for the *Server Side Heartbeat Timer* and click **OK**

The new Server Side Heartbeat Timer will take effect for all new connections.

Client Side Heartbeat Timer

To aid in the detection of failed links or failed remote PC's the Georgia SoftWorks Client software supports a Client Timeout value. The client will send a heartbeat to the server at specified time intervals. At installation, this value is set to 30 seconds. This can be changed using the shortcut properties.

If the server does not receive data from the client in the specified time, the connection is terminated. The data can be keyboard, or mouse input as well as the heartbeat. When keyboard or mouse data is transmitted, or when a heartbeat detected the server's timer is restarted.

The heartbeat time is specified as an *optional* command line argument in seconds.

EXAMPLE - SET THE GEORGIA SOFTWORKS SSH2/TELNET CLIENT SIDE HEARTBEAT

```
Gs_clnt.exe[14] /H1800
```

specifies a heartbeat time of 30 minutes (1800 seconds = 30 minutes). Normally there is no need to change this value. To disable the Client Side Heartbeat set it to –1.

To change the Client Heartbeat modify the command line parameter as described in the section on GSW Telnet and SSH2 Client command line options - Usage page 68.

Note: If an Inactivity Timeout occurs and the Session Saver is active the Session will be suspended; otherwise graceful termination will be initiated if specified.

[14] The file name for the GSW SSH2 client is gs_ssh.exe

Graceful Termination of DOS Applications

The Georgia SoftWorks Windows Universal Terminal Server is outstanding in the case of a link or remote PC failure we attempt to gracefully terminate the executing DOS application, therefore saving important data that may otherwise be lost. Many applications are terminated by sending a sequence of characters to the application such as ESC-ENTER. Applications may have specific sequences. We allow a termination string to be defined as an environment variable in the `k_start.bat` or `c_start.bat` file. When a session is to be terminated due the client heartbeat timer expiring or the server side inactivity timer expiring then the defined termination string will be sent to the associated application. Approximately 3 seconds later the session is terminated if still running.

The termination string is a comma delimited list of keystrokes that you want to send to the shell (or your application) before it is terminated due to either the Client Heartbeat timeout or the Server Side Inactivity timeout. No extra white space is allowed. The string is not case sensitive. For example you must specify `'shift-c'` to produce a capital 'C'.

Note: *Termination String Syntax is also used with GSW Mobile Client Macros when remapping function keys.*

The following control key designators are defined.

- shift-
- alt-
- ctrl-

The following special characters are defined.

- ESC
- ENTER
- TAB
- PGUP
- PGDOWN
- HOME
- END
- LEFT
- RIGHT
- UP

- DOWN
- DEL
- BACKSPACE
- F1
- F2 and so on through F12

Also a special operator is defined.

- Sleep*xx*

This special operator will *pause* the output to the shell for *xx* seconds. This gives the application time to process the input. This is very useful when saving files to disk and for applications that flush the keyboard buffer. By default a 1-second pause is injected between keystrokes, however some specific cases may require the use of the `Sleep`*xx* operator to introduce additional delay.

To ensure graceful termination you may want to enter the string `"e,x,i,t,ENTER"` to exit the shell. Once the specified application is terminated by the user-specified string, the above string will complete the graceful termination process. This string sends the command *exit* and then *enter*[15] which are the commands to terminate a session. You must be sure that the user defined termination string does indeed terminate the application before sending the `"e,x,i,t,ENTER"` string otherwise unintended characters will be sent to the application.

EXAMPLE - GRACEFUL TERMINATION: AMORTIZATION PROGRAM - LINK FAILURE.

We will continue to use the amortization program from the previous example. However, we will assume that a standard menu exists for the application. A *File* menu item exists that is invoked by *alt-f*. The list of items in the *File* menu list includes *s* for saving the work and *alt-f* for opening the file menu list again and then *x* for exiting the application. Next follows the ",e,x,i,t,ENTER" to gracefully close the shell.

Step 1. Create batch file c_start.bat

Step 2. Add this line to c_start.bat

```
d:\amor\amortize.exe
```

Step 3. Add this line to c_start.bat (note: there are no spaces in following the "=")

```
SET LRA_TERMINATION=alt-f,s,sleep5,alt-f,x,e,x,i,t,ENTER
```

Step 4. Save file and exit.

Now when the User ID "bill" connects to the Windows NT/XP/VISTA/2000/2003/2008 system via SSH2/Telnet the application amortize.exe will automatically be executed. If the session is terminated due to system timeouts the termination string *alt-f,s,sleep5,alt-f,x* will cause the following sequence of events to occur.

[15] Remember that the string *ENTER* is a Graceful Termination special character.

First *Alt-f* to be sent to the application (This opens the file menu).

Second *s* is send to the application (for saving the file).

Third, the Sleep5 causes 5-second pause to allow the application time to save the files,

Fourth *alt-f* to open the file menu list again,

Fifth an *x* is sent to the application to exit.

Finally ",e,x,i,t,ENTER" is send to the shell which terminates the session.

Other examples of termination string definitions are[16]:

```
SET LRA_TERMINATION=alt-f,x,e,x,i,t,ENTER
SET LRA_TERMINATION=F2,alf-f,x,e,x,i,t,ENTER
SET LRA_TERMINATION=ESC,ENTER,e,x,i,t,ENTER
```

[16] There are no spaces in the string following the "=" sign. Some printers and displays make it difficult to observe.

Termination Scripts

Termination scripting is analogous to the Logon Scripting except it is executed when the SSH2/Telnet session is terminated. The commands within the file `cleanup.bat` are invoked upon termination of a SSH2/Telnet session. This is invoked with both normal and abnormal terminations. Cleanup scripting is available on both a global and per user basis as with Logon Scripting.

NOTE: No applications that require user input are allowed in the cleanup scripts.

It is especially useful for properly un-mapping network connections such as drives. If you do not un-map drives when terminating the session you may be unable to connect to them the next time you logon. The cleanup.bat file allows automatic un-mapping of drives upon termination of the telnet session.

EXAMPLE - TERMINATION SCRIPT: CLEANUP.BAT FILE UNMAPPING THE "F" NETWORK DRIVE

The system administrator has setup user "Adam's" logon script to map drive "`f`" as a network drive. In user "Adam's" cleanup.bat script the system administrator will un-map the drive when the session is terminated.

Step 1. Create directory

c:\gs_uts\scripts\Adam

Step 2. Create batch file cleanup.bat

Step 3. Add the following line.

```
net use f:  /d
```

Step 4. Save file and exit.

This will un-map the f drive after the session is terminated.

NOTE: Please see the section on logon scripting to determine the location for the cleanup script files. (Page 158)

Termination of Child Processes

You have the capability to specify that all child processes started in the session will be terminated when the session ends. Terminating child processes upon a session ending is the desired behavior. However scenarios do exist where you want the session to terminate but you would like spawned child processes to continue. In either case Graceful Termination is attempted first. This feature is not available in Windows NT because the necessary operating system infrastructure did not exist until Windows 2000 and later (Windows XP/VISTA/2000/2003).

The environment variable for controlling the termination of child processes for a session is:

gwtn_job_control

For example, to select automatic termination of all child processes you would enter:

```
set gwtn_job_control=y
```

in the Logon Script for a particular user.

And to disable automatic termination of all child processes started in the session you would enter:

```
set gwtn_job_control=n
```

in the Logon Script for a particular user.

The default setting is enabled.

Legacy Pack

The Georgia SoftWorks UTS Server for Windows NT/XP/VISTA/2000/2003/2008 provides full support for DOS Legacy applications. When you run DOS legacy applications using the GSW UTS it is as if you are running them locally. We support DOS Character Mode Color graphics including the line and box characters.

With our client you can use the MOUSE just as you do locally. This was another feature **pioneered** by Georgia SoftWorks. The function keys and special characters also work and display as expected.

Legacy Pack	Configurable	Georgia SoftWorks Clients	3rd Party Client
Mouse	Yes	Yes	No
DOS Character Mode Color Graphics	N/A	Yes	Yes*
Function Keys	Yes	Yes	Yes*
Special Characters	Yes	Yes	Yes*
Screen Sizes other than 25 x 80	Yes	Yes	Yes*
Alt key support for all emulations	Yes	Yes	Yes
Control-C Configuration	Yes	Yes	Yes*

Table 19 - Legacy Pack

* As supported by the Terminal emulation mode

Mouse

When using the Georgia SoftWorks SSH2/Telnet Clients the Mouse works as if you are sitting locally at the server.

DOS Character Mode Color Graphics

DOS Character Mode Color Graphics is fully supported. This includes the full range of DOS Character mode Colors. All of the 256 possible background/foreground color combinations are supported.

Function Keys

The function keys work as expected. With the Georgia SoftWorks Universal Terminal Server for Windows NT/XP/VISTA/2000/2003/2008 the function keys operate as if you are sitting at the server and running the application locally. For 3rd Party clients the function keys are supported as per the emulation specified. Please note that some function keys are not supported by various emulations.

Special Characters

All characters with character codes between 0x00 through 0xFF are supported and displayed properly when using the Georgia SoftWorks SSH2/Telnet Clients and conforming third party client emulations.

Screen Sizes other than 25 x 80

You may place the Mode command (as described on page 228) in a logon script to set screen sizes. Please note that most UNIX Telnet/SSH2 clients default to 24 rows while Windows NT/XP/VISTA/2000/2003/2008 and DOS applications default to 25 rows. Thus you may have to

adjust your UNIX SSH2/Telnet client row count settings to see all the rows of your Windows or DOS application. Alternatively you may need issue the `mode con: lines=24` command. Note: if you issue this command you will not see the last row of your application.

Alt Key Support for all emulations

Alt keys are completely supported. For 3rd party client Alt key operations see page 123.

Control-C Configuration Support for all SSH2/Telnet Clients

There are different expectations as to the function of the behavior when <control-c> is depressed. The Georgia SoftWorks Universal Terminal Server allows configuration of the behavior for <control-c> by setting an environment variable in a logon script.

The environment variable for the <control-c> behavior is:

gwtn_ctrl_c_mode

The modes of control-c behavior are:

- **key** – <control-c> will be sent to the application as a character value of decimal 3
- **event** – <control-c> will be sent to the application as a signal/event which can be trapped.
- **auto** – The SSH2/Telnet Server will attempt to get the application's <control-c> settings and send either *event* or *key*, whichever appears to be appropriate. Sometimes the SSH2/Telnet server will make the wrong choice and you will have to override with an explicit setting. This is the **default** setting when the **gwtn_ctrl_c_mode** is not set.

For example to select Event Mode <control-c> behavior you would enter:

```
set gwtn_ctrl_c_mode=event
```

in the Logon Script for a particular user.

NOTE: No spaces are allowed when setting environment variables.

For example:

`set gwtn_ctrl_c_mode=event` is correct

`set gwtn_ctrl_c_mode =` `event` is not correct

Emulation Pack

When using 3rd party clients, comprehensive terminal emulations are a must. Not just offering a wide range of terminal emulations but they are also correctly implemented!

Emulation Pack	Configurable	Georgia SoftWorks Client	3rd Party Client
SCO Console	N/A	N/A	Yes*
DEC VT100/220/320/420	N/A	N/A	Yes*
Wyse 50, Wyse 60	N/A	N/A	Yes*
AT386	N/A	N/A	Yes*
IBM 3101, IBM 3151	N/A	N/A	Yes*
AlphaCom	N/A	N/A	Yes*
PDCurses for VT-220/320/420	N/A	N/A	Yes*
Perfect PC	N/A	Yes	No

Table 20 - Emulation Pack

* As supported by the terminal emulation mode

3rd Party Clients

The Georgia SoftWorks UTS for Windows NT/XP/VISTA/2000/2003/2008 will work with any RFC 854/SSH2 compliant 3rd party client. Please see the vendor's instructions for configuration of the 3rd party client.

The procedure for connecting with a 3rd party client is similar to connecting with the Georgia SoftWorks client (see page 62).

Terminal Emulation

Upon connecting with a 3rd party client you will be prompted to select a terminal emulation mode. Choose the desired emulation by selecting the appropriate number. *Be sure to set the 3rd party client emulation mode to the same emulation as the one selected on the server*. The terminal emulation options available are:

- DEC VT-100
- DEC VT-220/320/420
- SCO Console
- AT386
- Wyse 50
- Wyse 60
- IBM 3101
- IBM 3151
- AlphaCom - This is chosen when using the AlphaCommunicator Telnet Client.
- PDCurses for VT-220/320/420

Enter 0 for DEC VT-100 emulation, 1 for DEC VT-220/320/420, 2 for SCO Console emulation, 3 for AT386, 4 for Wyse 50, 5 for Wyse 60, 6 for IBM 3101, 7 for IBM 3151, 8 for AlphaCom emulation, 9 for PDCurses for VT-220/320/420

If you do not want to be prompted for the emulation mode each time you log on using a 3rd party client then you may set an environment variable on a per user basis using Logon Scripting (described later in the User Manual – Page 158).

The environment variable for the terminal emulation is:

gwtn_term

For example to select SCO Console emulation you would enter:

```
set gwtn_term=2
```

in the Logon Script for a particular user.

NOTE: No spaces are allowed when setting environment variables.

For example:

`set gwtn_term=2` is correct

`set gwtn_term =` `2` is not correct

Graphic Characters

Third party clients do not always handle graphic characters and commands as expected. The Georgia SoftWorks Universal Terminal Server for Windows NT/XP/VISTA/2000/2003/2008 is flexible in providing options for handling graphic characters with 3rd party clients. If you are unsure of which graphics mode to select then feel free to experiment to determine the best mode for your 3rd party client. Note that the typical progression is the order that the selections are presented. The first works for all, the next is more specialized and so on.

Note: The graphics mode prompts vary depending on the terminal emulation chosen.

Graphics Option Text	Description
Replace PC graphics characters with star characters:	This simply replaces PC graphics characters with the "asterisk" character
Translate PC Graphics characters	For VT emulation's the system converts the PC Graphic Characters to ACS and will temporally invoke Special Graphics character sets[17]. PC Graphics without ACS equivalents will be converted to the "asterisk" character
SCO Console special handling	For SCO Console, the system will inject appropriate escape
Pass PC Graphics characters without changes	This will pass any characters >= 0x80 without any changes
Pass all characters from PC Screen without changes.	This will pass ALL characters from the screen. Your client software may have trouble handing ASCII values for some of the control characters like 0x08 (backspace)
Georgia SoftWorks MSDOS Telnet Client	This is used when using the unsupported Georgia SoftWorks modified CUTCU/CUTE (NCSA) utilities for MSDOS. For more details visit this web page: http://www.georgiasoftworks.com/otherutilities.htm
User Defined Character Translation	Used in conjunction with the file GS_Xchar.txt for character translation. See page 129
Use UTF-8 encoded characters	All characters above and including 0x80 hex are encoded using the UTF-8 standard. See page 189
Simplified Chinese - GB2312 (EUC)	Used when connecting using emulator configured to receive and send Simplified Chinese.
Traditional Chinese - BIG5	Used when connecting using emulator configured to receive and send Traditional Chinese

Table 21 - Graphics option choices.

If you do not want to be prompted for the graphics mode each time you log on using a 3rd party client then you may set an environment variable on a per user basis using Logon Scripting.

The environment variable for the graphics mode is:

gwtn_graphics

[17] Note: Double line box characters will be converted to single line box characters.

The value for the environment variable will be the enumerated number associated with the graphics option when prompted. For example in the screen shot below the graphic options are listed with enumerated values ranging from 0 to 8.

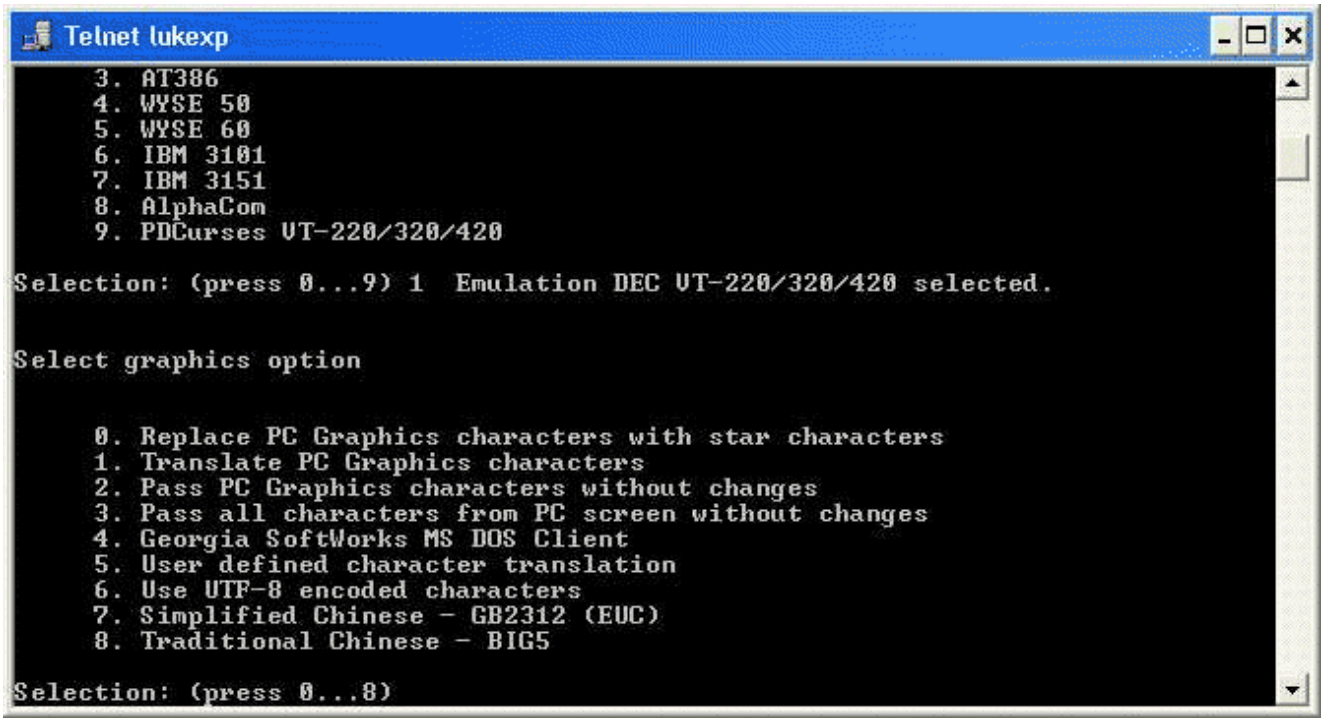

Telnet lukexp
3. AT386
4. WYSE 50
5. WYSE 60
6. IBM 3101
7. IBM 3151
8. AlphaCom
9. PDCurses VT-220/320/420
Selection: (press 0...9) 1 Emulation DEC VT-220/320/420 selected.
Select graphics option
0. Replace PC Graphics characters with star characters
1. Translate PC Graphics characters
2. Pass PC Graphics characters without changes
3. Pass all characters from PC screen without changes
4. Georgia SoftWorks MS DOS Client
5. User defined character translation
6. Use UTF-8 encoded characters
7. Simplified Chinese - GB2312 (EUC)
8. Traditional Chinese - BIG5
Selection: (press 0...8)

Figure 56: Select graphics option for 3rd party client.

For example to select *star* graphics character substitution you would enter:

```
set gwtn_graphics=0
```

in the Logon Script for a particular user.

NOTE: No spaces are allowed when setting environment variables. For example when setting the environment variable to select "Pass PC Graphics characters without changes" you would use the following syntax.

`set gwtn_graphics=2` is correct

`set gwtn_graphics = 2` is not correct

Color or Monochrome Presentations

Many times programs are developed to work with monochrome monitors or terminals. In this situation you can choose between a color and monochrome presentation. After the graphics mode options are presented the color or monochrome options are presented. The prompt

Do you want ANSI Colors? [Y/N]:

If you want a Color presentation choose "Y". If you want a Monochrome presentation choose "N".

If you do not want to be prompted for the Color or Monochrome presentation each time you log on using a 3rd party client then you may set an environment variable on a per user basis using Logon Scripting (Page 158). The environment variable for the Color or Monochrome presentation is:

gwtn_color

For example to select a color presentation you would enter:

```
set gwtn_color=1
```

in the Logon Script for a particular user.

And to select a monochrome presentation you would enter:

```
set gwtn_color=0
```

in the Logon Script for a particular user.

Color Mapping for Monochrome

If the monochrome mode is selected, the color mapping is performed as described below. For each character on the screen:

If background intensity is set then the blink attribute is set.

If foreground intensity is set then the bold attribute is set.

If the character is blue then the underscore attribute is set.

If background intensity is greater than foreground intensity then the inverse attribute is set as follows:

$$I = .3 * R + .6 * G + .1B$$

The intensity bit is not used in the above calculation. The attributes are additive.

Modification of Color Mapping for Monochrome

Certain color combinations displayed by the application do not display in a satisfactory way when converted to monochrome. This may be especially true when using monochrome RF devices. The Georgia SoftWorks SSH2/Telnet Server provides a mechanism to allow custom color mapping to monochrome displays.

The SSH2/Telnet Server upon startup reads the file "colormap.txt". This file defines the color to monochrome mappings. The text file contains 256 rows that represent all foreground and background color combinations and associated default monochrome mappings.

You may edit the file and alter the monochrome mappings to obtain the desired effects. You can then experiment to get the exact mappings desired. The format of the text file follows.

Legend: I: Intensity R: Red, G: Green, B: Blue

#Foreground				Background				Your monochrome(re)mapping			
#I	R	G	B	I	R	G	B	BLINK	INT	UND	INV
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	1	0	0	0	0	0	0	1	0
0	0	1	0	0	0	0	0	0	0	0	0
0	0	1	1	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0
0	1	0	1	0	0	0	0	0	0	0	0
0	1	1	0	0	0	0	0	0	0	0	0
0	1	1	1	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	1	0	0
1	0	0	1	0	0	0	0	0	1	1	0
1	0	1	0	0	0	0	0	0	1	0	0
1	0	1	1	0	0	0	0	0	1	0	0
1	1	0	0	0	0	0	0	0	1	0	0
1	1	0	1	0	0	0	0	0	1	0	0
1	1	1	0	0	0	0	0	0	1	0	0
1	1	1	1	0	0	0	0	0	1	0	0

… and so forth for all 256 possible mappings ….

#Foreground				Background				Your (re)mapping			
#I	R	G	B	I	R	G	B	BLINK	INT	UND	INV
0	0	0	0	1	1	1	1	1	0	0	1
0	0	0	1	1	1	1	1	1	0	1	1
0	0	1	0	1	1	1	1	1	0	0	1
0	0	1	1	1	1	1	1	1	0	0	1
0	1	0	0	1	1	1	1	1	0	0	1
0	1	0	1	1	1	1	1	1	0	0	1
0	1	1	0	1	1	1	1	1	0	0	1
0	1	1	1	1	1	1	1	1	0	0	0
1	0	0	0	1	1	1	1	1	1	0	1
1	0	0	1	1	1	1	1	1	1	1	1
1	0	1	0	1	1	1	1	1	1	0	1
1	0	1	1	1	1	1	1	1	1	0	1
1	1	0	0	1	1	1	1	1	1	0	1
1	1	0	1	1	1	1	1	1	1	0	1
1	1	1	0	1	1	1	1	1	1	0	1
1	1	1	1	1	1	1	1	1	1	0	0

The first and last 16 table entries are pictured above. Please see the file colormap.txt to see all 256-table entries.

Alt Keys

Many applications take advantage of the "Alt" key. However many keyboards and terminal emulations do not support the "Alt" key. The Georgia SoftWorks Universal Terminal Server for Windows NT/XP/VISTA/2000/2003/2008 allows the "Alt" key sequence to be transmitted to an application by providing a substitute key sequence (the Alt Prefix) for the "Alt" key. The default Alt Prefix is "Ctrl-b".

For example, in order to transmit "`Alt-f`" you will type:

`Ctrl-`b and then `f`.

(Depress *Ctrl* then *b*, release the keys and then depress *f*).

In order to really type in the AltPrefix character from the keyboard you will have to type it twice, like Ctrl-b Ctrl-b to get the Ctrl-b.

A different *Alt Prefix* can be configured using "AltPrefix" parameter in the registry editor. The default value is set to two 0x02 which is the ASCII value of Ctrl-b, other values are as follows:

AltPrefix Value	Key Sequence entered by User
0x01	`Ctrl-a`
0x02	`Ctrl-b`
0x04	`Ctrl-d`
0x06	`Ctrl-f`
0x0e	`Ctrl-n`
0x0f	`Ctrl-o`
0x10	`Ctrl-p`
0x12	`Ctrl-r`
0x14	`Ctrl-t`
0x15	`Ctrl-u`
0x16	`Ctrl-v`
0x17	`Ctrl-w`
0x19	`Ctrl-y`

Table 22 - Alt Prefix values

This is how to change the registry key for the AltPrefix.

Note: (you must be on the Windows NT/XP/VISTA/2000/2003/2008 system that the Georgia SoftWorks UTS for Windows is installed. However you may connect to the Windows NT/XP/VISTA/2000/2003/2008 Registry from a remote location).

The key is:

HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\GS_Tnet\Parameters\AltPrefix

1. Click the **Start** button at the bottom left corner of your screen.

2. Click **RUN**
3. Type `REGEDT32`
4. Click **OK**
5. Select Windows item **HKEY_LOCAL_MACHINE**
6. Select the menu item **Edit**
7. Move the mouse pointer and click **Find**
8. Type **`AltPrefix`**
9. Click on **Find Next**
10. Select the menu item **Edit** and then click on **Modify**
11. Enter the new value for the AltPrefix and click **OK**

The new AltPrefix will take effect for all new sessions.

ESC Delay

Third party clients will send *escape sequences* on certain occasions. For example when a function or arrow key is depressed a sequence of data is transmitted that starts with the escape character (`0x1b`). When the escape character is received, the server must determine if this escape is part of an escape sequence or simply an *escape* key. The server uses the **ESC Delay** value to determine how long to wait for the next character after an escape is received to consider it part of an escape sequence. If a character is not received within this time then the escape is considered to be an escape key, otherwise it is the start of an escape sequence.

The default value is 5 (500ms). You may want to increase this value if you see that escape sequences are not going through and being displayed on the screen rather than being interpreted. For example if you type F10 and see odd character starting with "]" or "[". This is most likely to happen with terminal servers or other slow links like RAS.

This is how to change the registry key for the Escape Delay.

Note: You must be on the Windows NT/XP/VISTA/2000/2003/2008 system that the Georgia SoftWorks UTS for Windows is installed. However, you may connect to the Windows NT/XP/VISTA/2000/2003/2008 Registry from a remote location.

The key is:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\GS_Tnet\Parameters\ESCDelay
```

1. Click the **Start** button at the bottom left corner of your screen.
2. Click **RUN**
3. Type `REGEDT32`
4. Click **OK**
5. Select Windows item **HKEY_LOCAL_MACHINE**
6. Select the menu item **Edit**
7. Move the mouse pointer and click **Find**
8. Type **`ESCDelay`**
9. Click on **Find Next**
10. Select the menu item **Edit** and then click on **Modify**
11. Enter the new value for the ESCDelay and click **OK**

Enable NAWS

Enable **N**egotiate **A**bout **W**indow **S**ize (NAWS) telnet option for 3rd party clients.
This registry parameter `EnableNAWS` allows the NAWS option to be enabled

Default Value is 0 which disables the NAWS option.

NOTE: This is a change from previous behavior when NAWS was always on since Version 6.50.0035 of February 10, 2005. The change is because some of the 3rd party telnet clients handle NAWS incorrectly and cause endless looping.

The registry value is:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\GS_Tnet\Parameters\EnableNAWS
```

Set this value to 1 to enable NAWS option. The change of this value takes effect for the next session connected.

NOTE: The GSW SSH2/Telnet clients handle window size automatically regardless of the parameter value.

Domain Specification using 3rd Party Clients

Please see the section 3rd Party Client - Default Domain Override on page 214 for further information.

Color Re-mapping – All Clients

This feature allows you to re-map (or change) the colors the user will see when using the Georgia SoftWorks Universal Terminal Server. Modify your application colors so they are easy to read on a gray scale device without any source code changes. Also re-map your application colors to fit a customer's look and feel without source changes.

A text file is used for specifying the colors to re-map. The name of the file is `gs_color.txt` and is installed in the GSW UTS root directory. If you want different color mappings on a 'per user' basis then place the gs_color.txt file in the user's directory in the Scripts folder (see Logon Scripting on page 158). The first column lists the original attribute bytes and the second column lists translated attributes. Attributes not included in this file are left un-translated. The '#' character in the first column designates a comment line.

Attribute	Attribute Bit Value	Description
FORGRROUND_BLUE	0x0001	Text Color contains blue
FORGRROUND_GREEN	0x0002	Text Color contains green
FORGRROUND_RED	0x0004	Text Color contains red.
FORGRROUND_INTENSITY	0x0008	Text Color is intensified.
BACKGROUND_BLUE	0x0010	Background color contains blue.
BACKGROUND_GREEN	0x0020	Background color contains green.
BACKGROUND_RED	0x0040	Background color contains red
BACKGROUND_INTENSITY	0x0080	Background color is intensified.

Table 23 - Color Re-Mapping

Using the Attribute Bit Values from Table 23 we can create all possible color codes.

Foreground Color Value	Description		Background Color Value	Description
00	Black foreground		00	Black background
01	Blue foreground		10	Blue background
02	Green foreground		20	Green background
03	Cyan foreground		30	Cyan background
04	Red foreground		40	Red background
05	Magenta foreground		50	Magenta background
06	Brown foreground		60	Brown background
07	White foreground		70	White background
08	Gray foreground		80	Gray background
09	Bright blue foreground		90	Bright blue background
0A	Bright green foreground		A0	Bright green background
0B	Bright cyan foreground		B0	Bright cyan background
0C	Bright red foreground		C0	Bright red background
0D	Bright magenta foreground		D0	Bright magenta background
0E	Yellow foreground		E0	Yellow background
0F	Bright white foreground		F0	Bright white background

Table 24 - All Possible Color Codes

Attribute values are created by **adding** the foreground value to the background value.

For example: 93 means cyan text on bright blue background.

EXAMPLE - COLOR TRANSLATION TABLE ENTRIES:

Example 1: Change white on blue characters to red on white use this entry:

17 74

Example 2: To change white on black characters to bright white on black use this entry.

07 0F

Automatic Logon 3rd Party Clients - AutoLogon

This feature allows you to pre-configure a list of IP addresses that will be able to connect and log on without any User ID, Password or Domain prompting when using 3rd Party Clients.

AutoLogon is useful in many situations; however the real power of this feature is realized when coupled with the Session Saver (page 102) and/or used with RF Data collection devices for fast and easy connection establishment. For example when a connection is broken due to a link failure you can reconnect without the time consuming UserID, Password and Domain prompts and resume work exactly where you left off before the link failure.

Please see page 96 for details on Automatic Logon and page 98 Automatic Logon with 3rd Party Clients.

Character Display Translation: 3rd Party Clients

You may have a special situation or advanced application where it would be useful to translate characters sent to the terminal to a different character or string of characters. Normally you do not need to get familiar with this section however the capability is present for advanced requirements.

This feature allows you to translate (or replace) the characters the user will see on 3rd Party Clients and RF Terminals when using the Georgia SoftWorks Universal Terminal Server. You may translate a single character to ***one*** or ***more*** (up to 10 characters) other characters.

A text file is used for specifying the characters to translate. The name of the global file is `gs_xchar.txt` and is installed in the SSH2/Telnet server's root directory. Each row in the file specifies a character to translate and the replacement character(s). Characters not included in the file are left un-translated. The specifications of the characters are byte values in hexadecimal each separated by a single space. The '#' character in the first column designates a comment line.

The first value in each row specifies the character to be translated. The character or list of characters that replace the original character follows.

For example the following entry in the file will replace all lower case letter 'a" with upper case 'A' when sent to the terminal.

```
61 41
```

Note: Remember that **hex 61** is ASCII lowercase **a** and **hex 41** is ASCII uppercase **A**

Another example: The following entry in the file will replace the PC bottom right corner character with the string using the DEC Special Graphics character set.

```
bc 0e 6a 0f
```

Terminal Initialization: 3rd Party Clients

You may have a special situation or advanced application where you need to send a specific terminal initialization sequence to a 3rd party client. Normally you do not need to get familiar with this section however the capability is present for advanced requirements.

This feature allows you to send an additional sequence of characters to the 3rd party client at the start of each session. You may send one or ***more*** (up to 10 per row) initialization characters to the 3rd party client.

A text file is used for specifying the initialization characters to send. The name of the global file is `gs_tinit.txt` and is installed in the GSW UTS root directory. Each row in the file specifies up to ten characters to send to the 3rd party client. The specifications of the characters are byte values in hexadecimal each separated by a single space. The '#' character in the first column designates a comment line.

Each row must start in the first column.

For example:

```
1b 2e 25
```

will load the Portuguese character set into G2 for vt-220 terminal.

Power Features Pack

As you would expect the most powerful and useful features are **standard** with the Georgia SoftWorks UTS for Windows NT/XP/VISTA/2000/2003/2008. Everything from True Client Side Printing, Logon scripting, Session Monitoring and Session Shadowing to Programmatic access to the server. These are not marketing or sales features but useful and powerful features requested and used by SSH2/Telnet users around the world.

Power Features Pack	Configurable	GSW Clients	3rd Party Client
Session Administrator – - Observe/Sort client Sessions - **Monitor** client Sessions - **Shadow** client Sessions - **Attach** to client Sessions - Terminate client Sessions - Send / Broadcast Message to client Session(s) - Launch via Command Line	Yes	Yes	Yes
Event and Activity Logging	Yes	Yes	Yes
Logon Scripting	Yes	Yes	Yes
Programmatic Access to server	Yes	Yes	Yes
True Client Side Printing	Yes	Yes	Yes
- Enhanced Method	Yes	Yes	No
- Open Method	Yes	Yes	Yes
- Default Method	Yes	Yes	Yes
Client Identity Uniqueness	Yes	Yes	Yes

Table 25 - Power Features Pack

Session Administrator

Included with the Georgia SoftWorks Universal Terminal Server for Windows NT/XP/VISTA/2000/2003/2008 is a powerful administrative, development and training tool - the Session Administrator. The session administrator is a standalone utility that allows users within a certain group to perform many useful tasks associated with the active SSH2/Telnet sessions on their system. You may Observe, Monitor, Shadow, Attach and Terminate other SSH2/Telnet sessions.

Monitoring and Shadowing are features pioneered by Georgia SoftWorks for SSH2 and Telnet Servers. With *Monitoring* you can connect to existing SSH2/Telnet sessions and observe the screen exactly as the client sees the screen. You may *Shadow* as session in the event you need *interactive input capabilities* with that session. You may use this utility as a local Windows NT/XP/VISTA/2000/2003/2008 user or as a user connected via SSH2/Telnet .

Session Monitoring Privileges

To use the GS Administrator a user[18] **must** belong to the **local** group *Gwtn Monitors*. The system administrator must first create the group *Gwtn Monitors*. Next all users allowed to use the Session Administrator must be added to the group. You **will** have to restart the Windows NT/XP/VISTA/2000/2003/2008 server after creating the group and adding users. Windows NT/XP/VISTA/2000/2003/2008 does not

[18] Note: Only "Users" can be added to the group GWTN MONTORS. Other groups can not be added to GWTN MONITORS.

instantaneously update the group membership after the user manager is closed and thus restarting the server is prudent.

The standard Windows NT/XP/VISTA/2000/2003/2008 graphical User Management tools can be used to create the local group *Gwtn Monitors* and add users to the group. Tools to perform these actions are also available from the command line and you may find that they are faster and easier to use.

To add the group from the command line please **log on as an administrator**[19], open a Command Prompt window on the server and run the following command:

```
net   localgroup   "Gwtn Monitors" /ADD
```

To add a user to the group, run the following command:

```
net   localgroup   "Gwtn Monitors" username   /ADD
```

(`username` parameter must be replaced with the actual name of the user who will be allowed to run the GSW Session Administrator)
You need to restart the server after this command completes successfully.

To find out who is allowed to run the GSW Session Administrator use the command:

```
net   localgroup   "Gwtn Monitors"
```

The command will provide the listing of the members of '`Gwtn Monitors`'.

[19] You must have administrative privileges to create groups and add users to groups.

Starting the Session Administrator

The name of the session administrator utility is **gs_admin.exe** and resides in the UTS installation directory. The Georgia SoftWorks Universal Terminal Server program group has an entry to start the Session Administrator. It may also be started from the command line locally or via SSH2/Telnet.

When the session administrator is executed a window is opened that dynamically displays all SSH2/Telnet sessions. For each session the Logon Id, the Logon time, the Process ID, the Monitor ID, the IP address and the Connection State are displayed. The menu bar contains the items *File* and *Sessions*. The bottom right corner of the *Session Administrator* displays the number of SSH2/Telnet Sessions that are currently active.

For each SSH2/Telnet session the following information is displayed:

User Name - Login ID of the Windows user[20]

Logon Time - Date and time the user logged on to the system via SSH2/Telnet.

Process ID - Process ID assigned to the SSH2/Telnet Session

Monitor ID - Process ID of the gs_admin that is monitoring the session. This indicates that this session is being monitored or shadowed.

IP Address - IP address of the computer where the client is located.

State - Connection State of the SSH2/Telnet session.

Defined States are:

Logon - A User is in the process of logging in via SSH2/Telnet.

Conn - SSH2/Telnet session is Connected

Disc - A User is disconnecting

NoRsp - The Application has not responded to the data in its input queue

Susp - A SSH2/Telnet Session is Suspended. That means the *Session Reconnect* (page 102) feature is enabled and the client or link has failed leaving the session Suspended. A Suspended session can be reconnected to via the Auto-Reconnect feature or via the Attach feature of the Session Administrator. A Suspended session can be terminated via the Terminate feature of the Session Administrator or when the **gwtn_reconnect_timeout** timer expires.

[20] Note: When used with the GSW Rocket Terminal Engine the SAP User Name is also displayed.

Observing SSH2/Telnet Sessions

Using the Session Administrator allows observation of all telnet sessions on the SSH2/Telnet Server. Relevant information is displayed in an easy to read format.

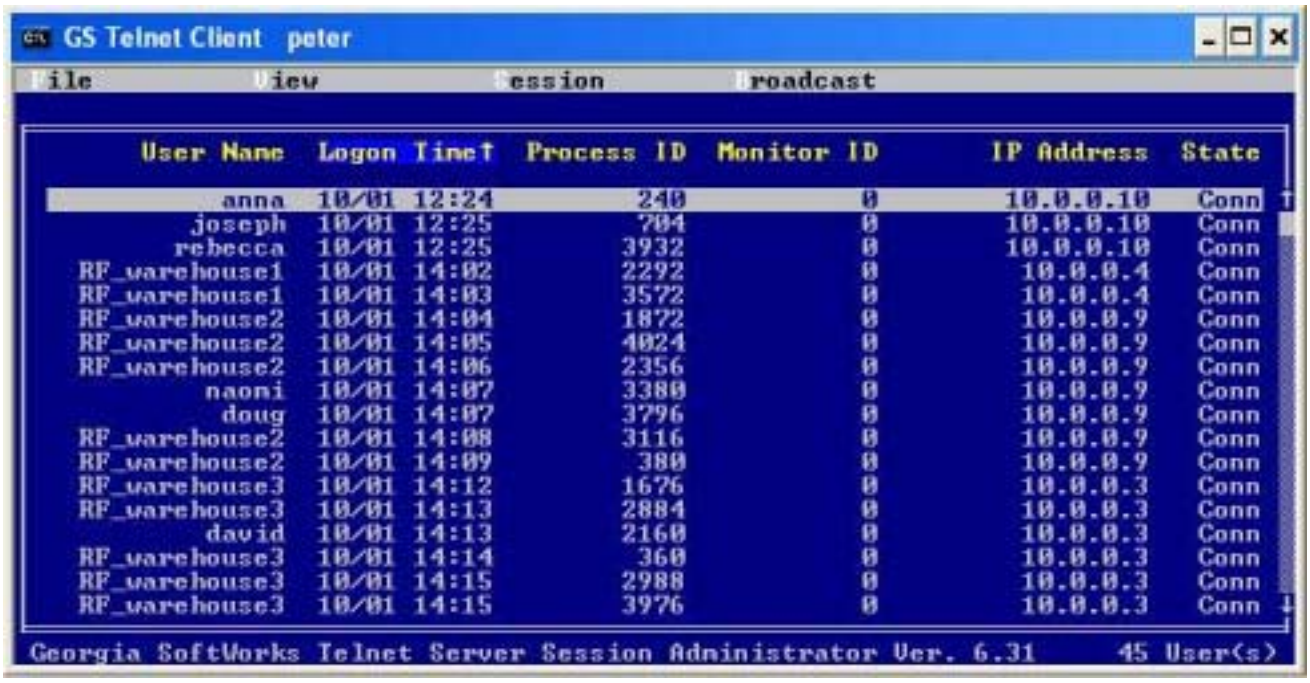

GS Telnet Client peter
File View Session Broadcast
User Name Logon Time↑ Process ID Monitor ID IP Address State
anna 10/01 12:24 240 0 10.0.0.10 Conn
joseph 10/01 12:25 704 0 10.0.0.10 Conn
rebecca 10/01 12:25 3932 0 10.0.0.10 Conn
RF_warehouse1 10/01 14:02 2292 0 10.0.0.4 Conn
RF_warehouse1 10/01 14:03 3572 0 10.0.0.4 Conn
RF_warehouse2 10/01 14:04 1872 0 10.0.0.9 Conn
RF_warehouse2 10/01 14:05 4024 0 10.0.0.9 Conn
RF_warehouse2 10/01 14:06 2356 0 10.0.0.9 Conn
naoni 10/01 14:07 3380 0 10.0.0.9 Conn
doug 10/01 14:07 3796 0 10.0.0.9 Conn
RF_warehouse2 10/01 14:08 3116 0 10.0.0.9 Conn
RF_warehouse2 10/01 14:09 380 0 10.0.0.9 Conn
RF_warehouse3 10/01 14:12 1676 0 10.0.0.3 Conn
RF_warehouse3 10/01 14:13 2884 0 10.0.0.3 Conn
david 10/01 14:13 2160 0 10.0.0.3 Conn
RF_warehouse3 10/01 14:14 360 0 10.0.0.3 Conn
RF_warehouse3 10/01 14:15 2988 0 10.0.0.3 Conn
RF_warehouse3 10/01 14:15 3976 0 10.0.0.3 Conn
Georgia SoftWorks Telnet Server Session Administrator Ver. 6.31 45 User(s)

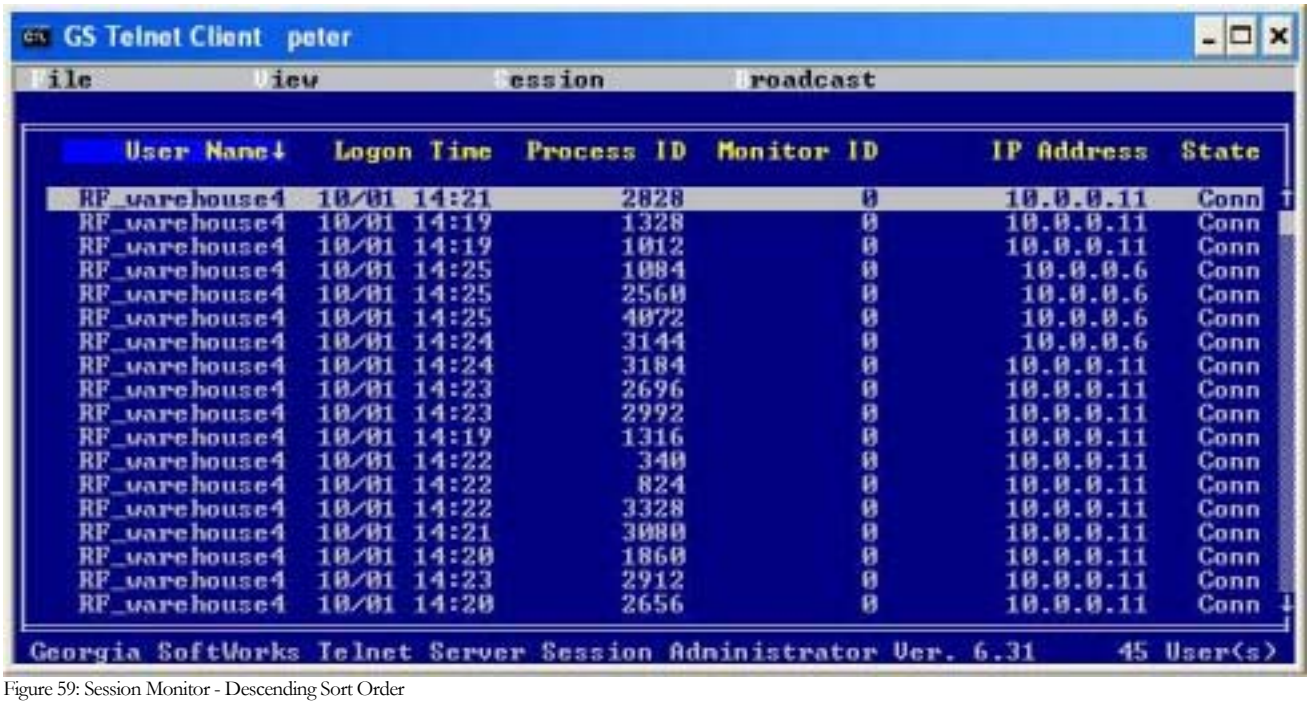
Figure 57: Session Monitor - Observing Telnet Sessions

The initial display is sorted by the *Logon Time* for each session (Note the Arrow adjacent to the Logon Time heading). The session that has been logged on the longest is displayed first and the most recent is displayed last. The display may be sorted by User Name, Logon Time, Process ID, IP Address or State. You can use the *View* menu item to select the column to sort on, or you may click on the column heading.

GS Telnet Client peter
File View Session Broadcast
Sort in System Order
√ Sort by User
Sort by SNP User
Sort by Logon Time
Sort by PID
Sort by IP
Sort by State
RF_warehouse1 10/01 14:02 2292 0 10.0.0.4 Conn
RF_warehouse3 10/01 14:17 3788 0 10.0.0.3 Conn
RF_warehouse3 10/01 14:15 3976 0 10.0.0.3 Conn
RF_warehouse3 10/01 14:14 360 0 10.0.0.3 Conn
RF_warehouse3 10/01 14:17 260 0 10.0.0.3 Conn
RF_warehouse3 10/01 14:12 1676 0 10.0.0.3 Conn
RF_warehouse3 10/01 14:15 2988 0 10.0.0.3 Conn
RF_warehouse3 10/01 14:13 2884 0 10.0.0.3 Conn
RF_warehouse3 10/01 14:16 2296 0 10.0.0.3 Conn
RF_warehouse3 10/01 14:18 2132 0 10.0.0.3 Conn
RF_warehouse3 10/01 14:16 2228 0 10.0.0.3 Conn
RF_warehouse4 10/01 14:23 2912 0 10.0.0.11 Conn
RF_warehouse4 10/01 14:21 3120 0 10.0.0.11 Conn
Georgia SoftWorks Telnet Server Session Administrator Ver. 6.31 36 User(s)

Figure 58: Session Monitor - Menu Sort Options

You may also reverse the sort by re-checking the User Name menu item or by clicking the column heading again. Click the heading to toggle between the ascending and descending sort order. Again, note the arrow beside the column heading to indicate the sort order.


GS Telnet Client peter
File View Session Broadcast
User Name↓ Logon Time Process ID Monitor ID IP Address State
RF_warehouse4 10/01 14:21 2828 0 10.0.0.11 Conn
RF_warehouse4 10/01 14:19 1328 0 10.0.0.11 Conn
RF_warehouse4 10/01 14:19 1012 0 10.0.0.11 Conn
RF_warehouse4 10/01 14:25 1084 0 10.0.0.6 Conn
RF_warehouse4 10/01 14:25 2560 0 10.0.0.6 Conn
RF_warehouse4 10/01 14:25 4072 0 10.0.0.6 Conn
RF_warehouse4 10/01 14:24 3144 0 10.0.0.6 Conn
RF_warehouse4 10/01 14:24 3184 0 10.0.0.11 Conn
RF_warehouse4 10/01 14:23 2696 0 10.0.0.11 Conn
RF_warehouse4 10/01 14:23 2992 0 10.0.0.11 Conn
RF_warehouse4 10/01 14:19 1316 0 10.0.0.11 Conn
RF_warehouse4 10/01 14:22 340 0 10.0.0.11 Conn
RF_warehouse4 10/01 14:22 824 0 10.0.0.11 Conn
RF_warehouse4 10/01 14:22 3328 0 10.0.0.11 Conn
RF_warehouse4 10/01 14:21 3080 0 10.0.0.11 Conn
RF_warehouse4 10/01 14:20 1860 0 10.0.0.11 Conn
RF_warehouse4 10/01 14:23 2912 0 10.0.0.11 Conn
RF_warehouse4 10/01 14:20 2656 0 10.0.0.11 Conn
Georgia SoftWorks Telnet Server Session Administrator Ver. 6.31 45 User(s)
Figure 59: Session Monitor - Descending Sort Order

Monitoring SSH2/Telnet Sessions

Session Monitoring is the method used to locally observe the display on a remote SSH2/Telnet session. As the data displayed on the remote SSH2/Telnet client, an exact copy is sent to the Session Monitor too. The display is exactly the same as the display being presented to the remote session. Session Monitoring is transparent to the client being monitored and does not impact their performance.

To select a SSH2/Telnet session to monitor first highlight the session to monitor. This is accomplished either by moving the up/down arrow keys or clicking on the particular session[21]. Once selected either depress <ENTER> or click the menu item *Session* (see Figure 59) to display the drop down item *Monitor*. You may now select *Monitor*.

You are now connected to the other telnet session, observing the screen activity exactly is appears to the other user. You may monitor only. No input is allowed to the other session. To end monitoring the other telnet/SSH2 session depress <ESC>. You are returned to the Session Administrator Screen.

Notice that the graphics, the colors, the lines, checks and box's are all displayed correctly.

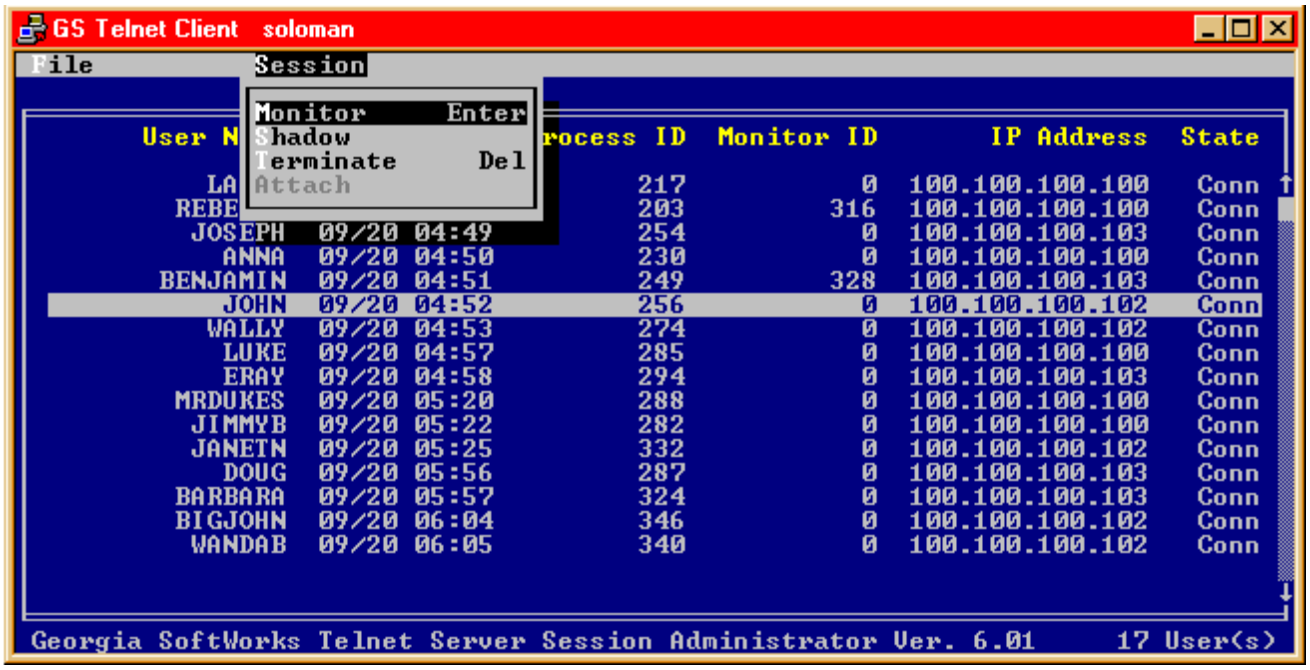


Figure 60: Session Monitor - Select Session to Monitor

[21] Hint: The fastest method is to simply double click on the session to immediately start monitoring.

If User John was using Norton Command and his screen was displaying the following:

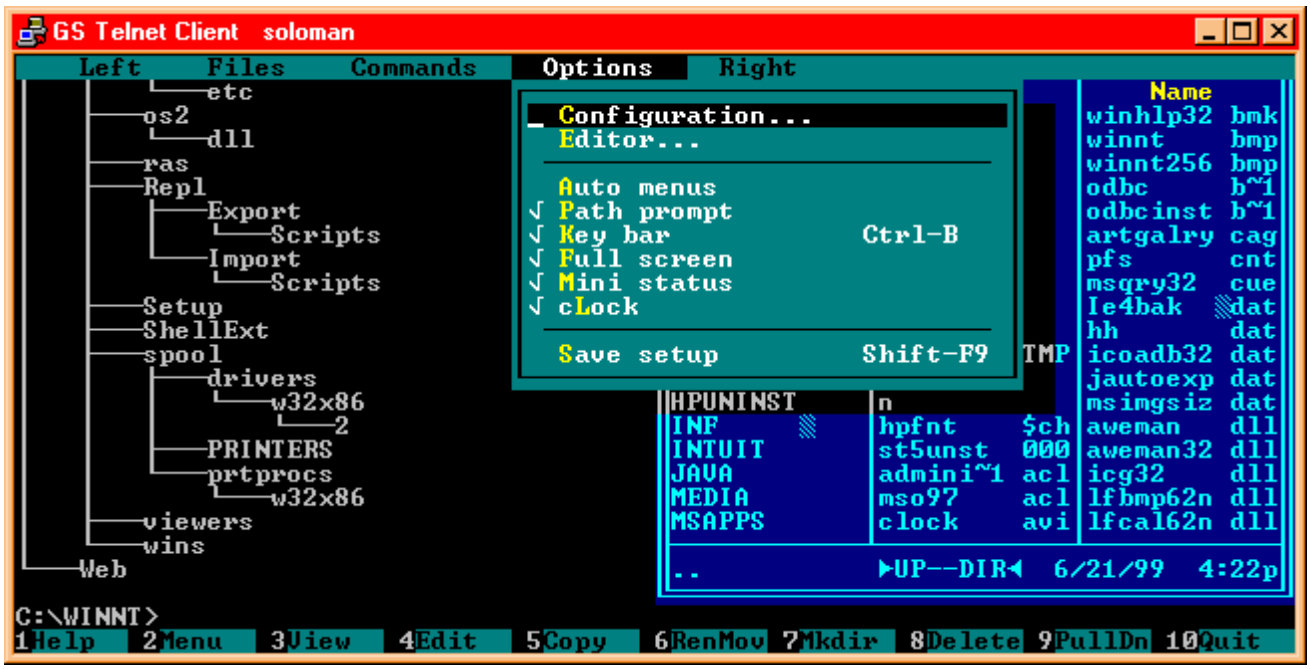


Figure 61: Session Monitor: Client Session

Then the monitor screen would look as follows:

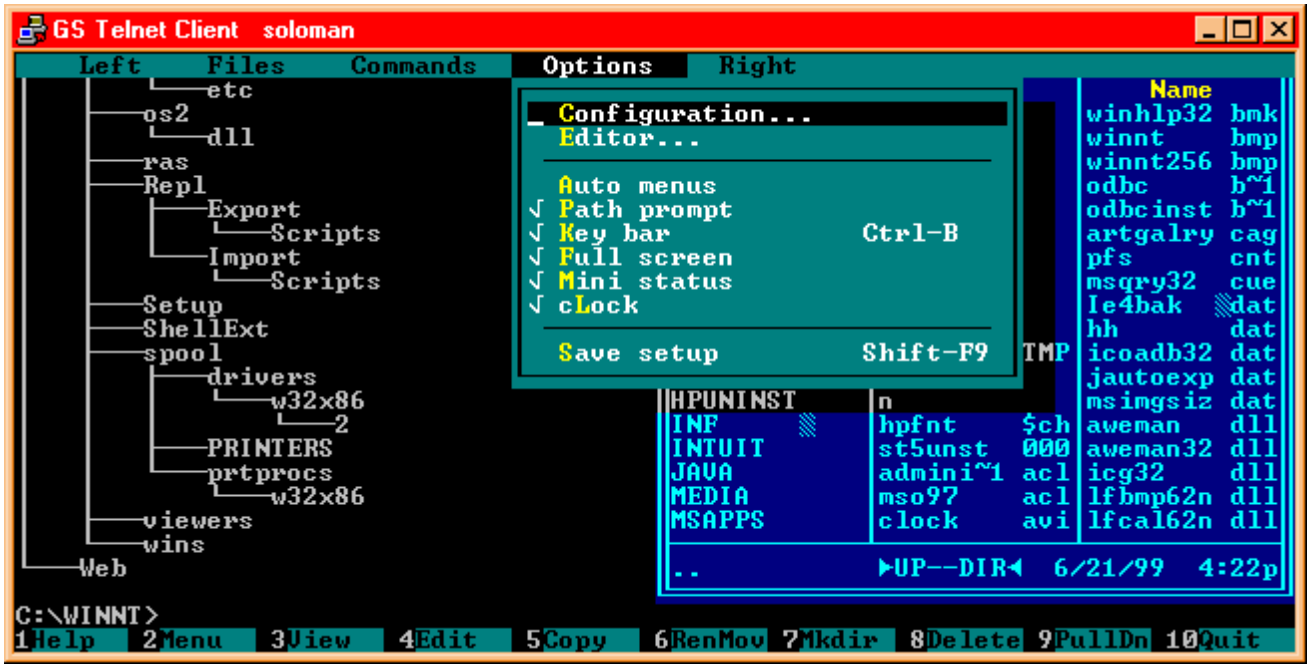


Figure 62: Session Monitor: Monitor Session

Yes, the screen displays look exactly the same and that is the way it is supposed to work. The Monitor's screen displays the screen activity exactly as it appears on the session being monitored!

Shadowing SSH2/Telnet Sessions

Shadowing is similar to Monitoring except **interactive input is allowed**. This means that you can provide input to another SSH2/Telnet session. This is a powerful training and Quality Assurance tool. A user may need assistance in using their application and you can shadow their SSH2/Telnet session providing input where they have difficulty.

To select a SSH2/Telnet session to Shadow first highlight the desired session. This is accomplished either by moving the up/down arrow keys or clicking on the particular session. Once selected click the menu item *Session* (see Figure 59) to display the menu drop down items. You may now select *Shadow*. As a shortcut you may simply press "S".

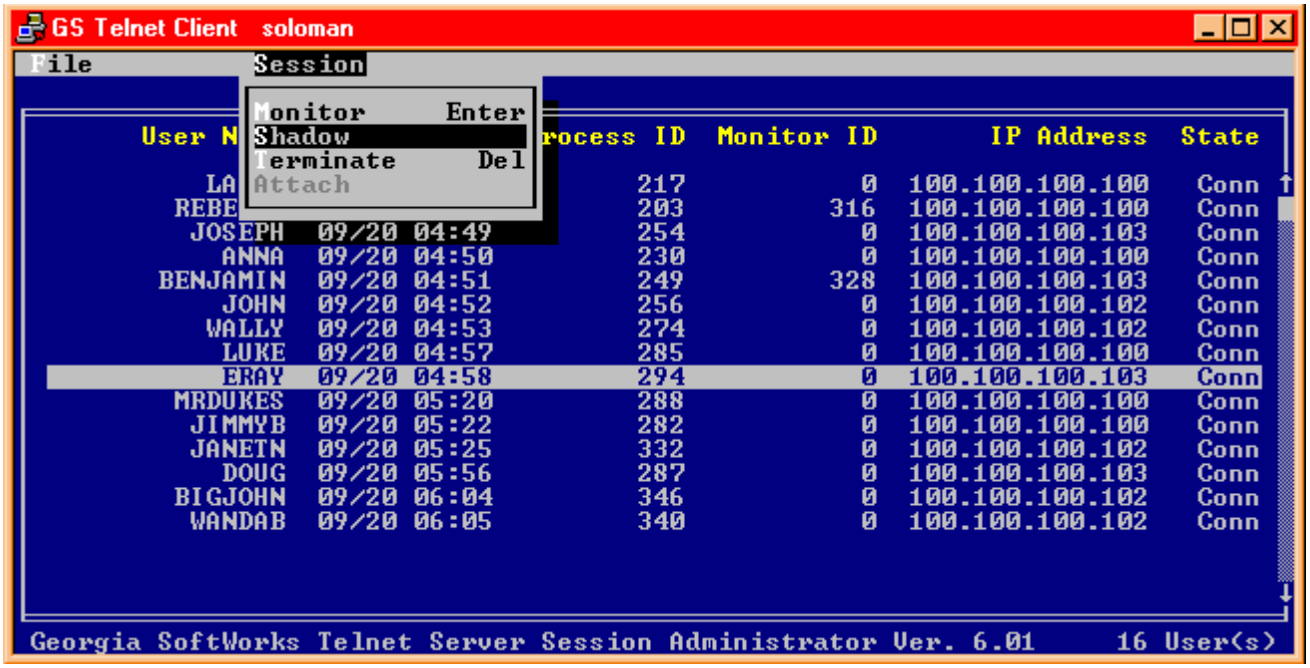


Figure 63: Session Monitor - Shadowing

You are now connected to the other SSH2/Telnet session, observing the screen activity exactly is appears to the other user. Both you and the original user are now able to enter data into the session. To end shadowing the other SSH2/Telnet session, depress `<ctrl-z>`. You are returned to the Session Administrator screen.

SSH2 FIPS 140-2 Sessions

The GSW SSH2 Server has a FIPS 140-2 option available for purchase. The Session Administrator can be used to verify that a GSW SSH2 FIPS 140-2 compliant client is connected to the GSW SSH2 FIPS 140-2 compliant server. These connections are identified by an asterisk "*" prepended to the User Name in the Session Administrator as shown below.

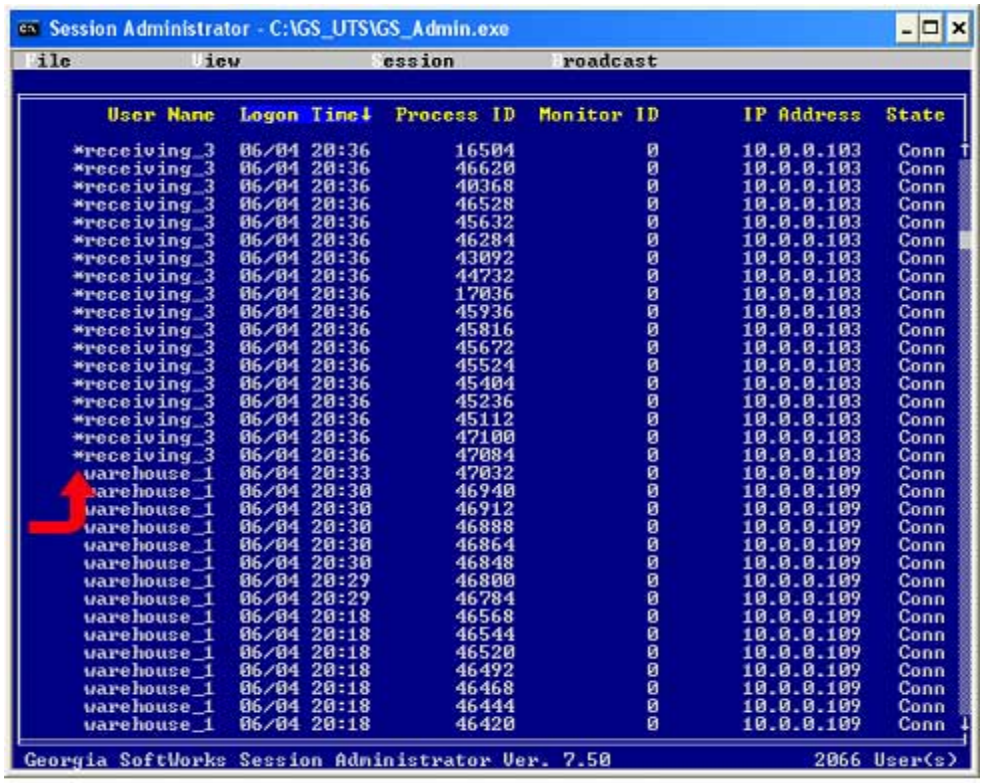


Figure 64: FIPS 140-2 compliant connections

Terminating SSH2/Telnet Sessions

To select a SSH2/Telnet session to terminate first highlight the session to terminate. This is accomplished either by moving the up/down arrow keys or clicking on the particular session. Once selected either depress <DEL> or click the menu item *Session* to display the drop down item *Terminate*. You may now select *Terminate*.

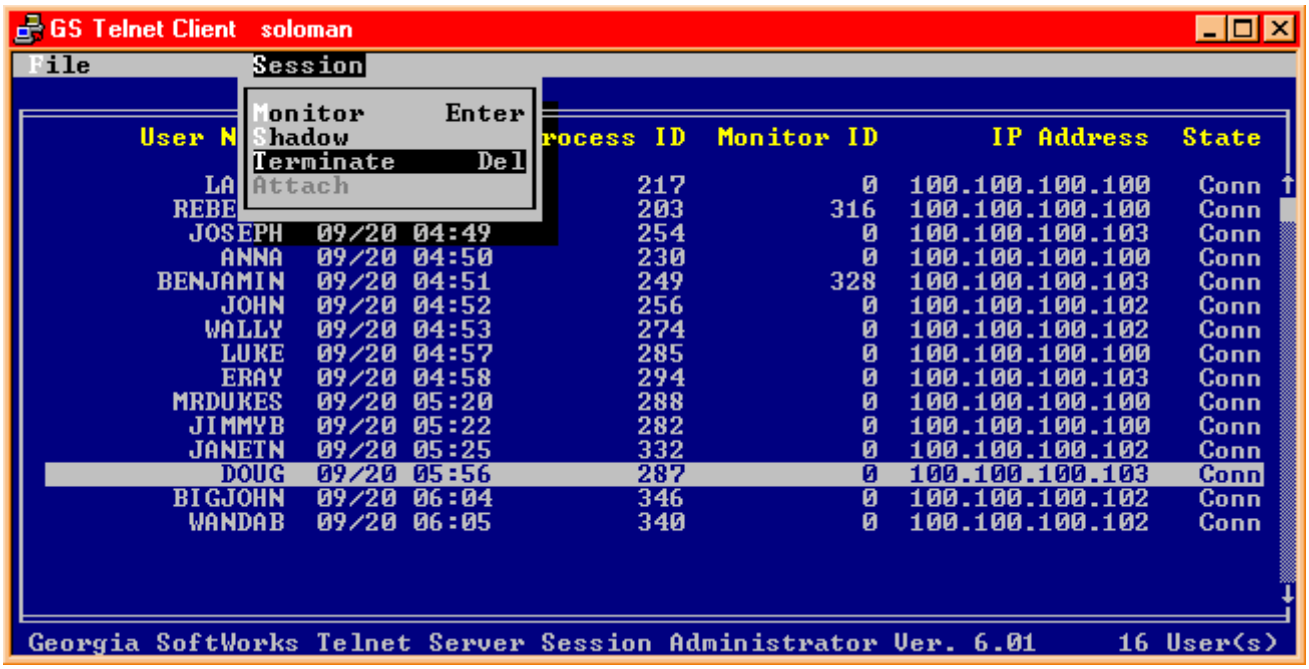


Figure 65: Session Monitor: Terminate another session

You will be prompted to make sure that you want to terminate the session. Graceful Termination (page 110) will take place upon terminating the session.

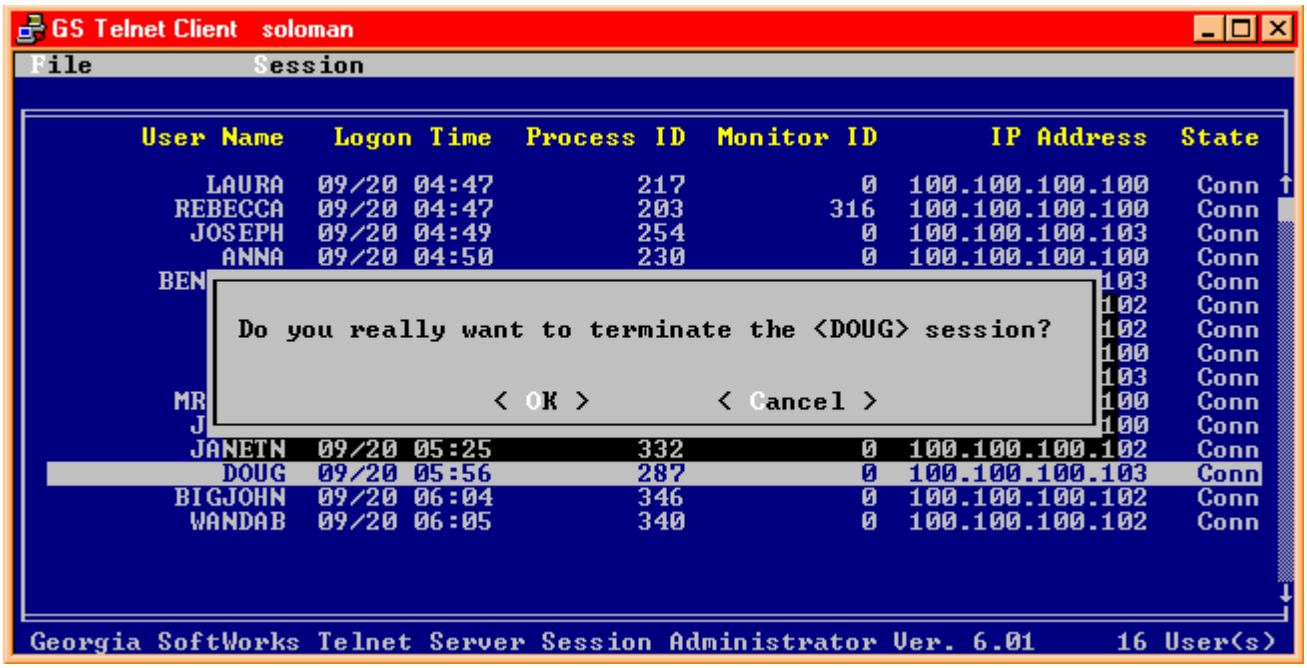

GS Telnet Client soloman
File
Session
User Name Logon Time Process ID Monitor ID IP Address State
LAURA 09/20 04:47 217 0 100.100.100.100 Conn
REBECCA 09/20 04:47 203 316 100.100.100.100 Conn
JOSEPH 09/20 04:49 254 0 100.100.100.103 Conn
ANNA 09/20 04:50 230 0 100.100.100.100 Conn
Do you really want to terminate the <DOUG> session?
< OK > < Cancel >
JANETN 09/20 05:25 332 0 100.100.100.102 Conn
DOUG 09/20 05:56 287 0 100.100.100.103 Conn
BIGJOHN 09/20 06:04 346 0 100.100.100.102 Conn
WANDAB 09/20 06:05 340 0 100.100.100.102 Conn
Georgia SoftWorks Telnet Server Session Administrator Ver. 6.01 16 User(s)

Figure 66: Session Monitor Terminate another session verification prompt

Attach to a Suspended (Saved) Session

As a member of the group GWTN MONITORS you may need to know if there are any Suspended sessions. Suspended Sessions are created when the Session Saver (see page 102) feature is enabled and a client or link has failed, and the user has not yet reconnected to their Saved session.

Using the *Attach* feature of the Session Administrator tool you can *Attach* (or connect) to a Suspended session and complete their work in progress. The Attach actually terminates your current session and transfers control to you. You are now operating within the Suspended Session. The Suspended session state changes back to "Conn" and will no longer be suspended.

NOTE: For the Attach to work you must be invoking the Session Administrator from a SSH2/Telnet session.

To select a SSH2/Telnet session to Attach first highlight the desired Suspended session. This is accomplished either by moving the up/down arrow keys or clicking on the particular session. Once selected, open the Session drop down and select the menu item *Attach*.

Note: Attach will not be available as a choice if the session selected in not in the Suspended state or if you are not connected via a SSH2/Telnet connection.

Select *Attach*. You are now *Attached* to the Suspended session. You will observe the screen exactly as the user was seeing it when their session was broken due to client or link failure. Interactive Input capabilities are available to resume work in progress.

When you exit the SSH2/Telnet Session, you are not returned to the Session Administrator tool, but are disconnected just as the user of the original session would have been had they exited the SSH2/Telnet session.

Send a Broadcast Message to SSH2/Telnet Sessions

The capability to send a message to either a single or all SSH2/Telnet sessions is available via the Session Administrator. This is useful in many situations when the system administrator needs to communicate information to one or all users usually regarding system status or maintenance. This saves the system administrator time because the need to make multiple phone calls or physically contacting the users is not necessary.

An example could be that the system administrator would want to notify all users to be logged off by a certain time due to system maintenance. Another example may be to send a message to a specific user requesting that they help another user.

Broadcast a message to ALL SSH2/Telnet Sessions

To send a message to all currently active SSH2/Telnet sessions either depress <ALT-B> or click the menu item **Broadcast** to display the drop down item **Send**. You may now select **Send**.

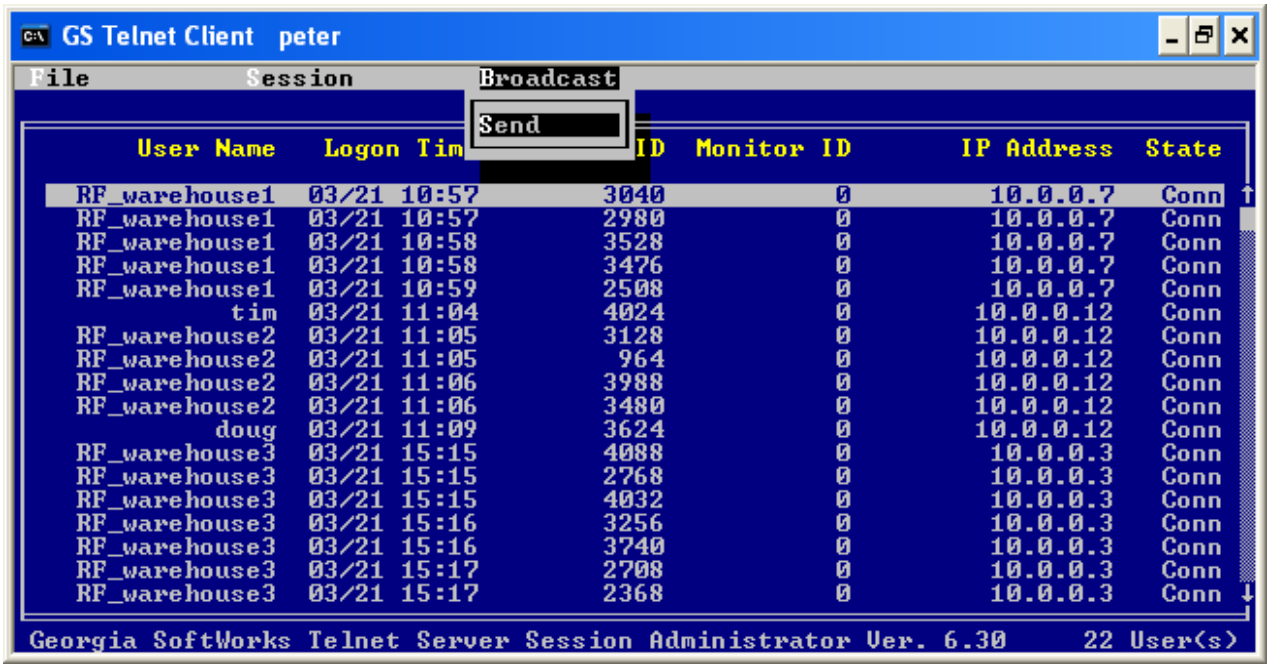

GS Telnet Client peter
File
Session
Broadcast
Send
User Name Logon Tim ID Monitor ID IP Address State
RF_warehouse1 03/21 10:57 3040 0 10.0.0.7 Conn
RF_warehouse1 03/21 10:57 2980 0 10.0.0.7 Conn
RF_warehouse1 03/21 10:58 3528 0 10.0.0.7 Conn
RF_warehouse1 03/21 10:58 3476 0 10.0.0.7 Conn
RF_warehouse1 03/21 10:59 2508 0 10.0.0.7 Conn
tim 03/21 11:04 4024 0 10.0.0.12 Conn
RF_warehouse2 03/21 11:05 3128 0 10.0.0.12 Conn
RF_warehouse2 03/21 11:05 964 0 10.0.0.12 Conn
RF_warehouse2 03/21 11:06 3988 0 10.0.0.12 Conn
RF_warehouse2 03/21 11:06 3480 0 10.0.0.12 Conn
doug 03/21 11:09 3624 0 10.0.0.12 Conn
RF_warehouse3 03/21 15:15 4088 0 10.0.0.3 Conn
RF_warehouse3 03/21 15:15 2768 0 10.0.0.3 Conn
RF_warehouse3 03/21 15:15 4032 0 10.0.0.3 Conn
RF_warehouse3 03/21 15:16 3256 0 10.0.0.3 Conn
RF_warehouse3 03/21 15:16 3740 0 10.0.0.3 Conn
RF_warehouse3 03/21 15:17 2708 0 10.0.0.3 Conn
RF_warehouse3 03/21 15:17 2368 0 10.0.0.3 Conn
Georgia SoftWorks Telnet Server Session Administrator Ver. 6.30 22 User(s)

Figure 67: Broadcast a message to all telnet sessions

Note: In the figure above - even though a single session is highlighted the Broadcast message will go to ALL SSH2/Telnet sessions.

Upon selecting the menu item **SEND** you will see a screen similar to the figure below.

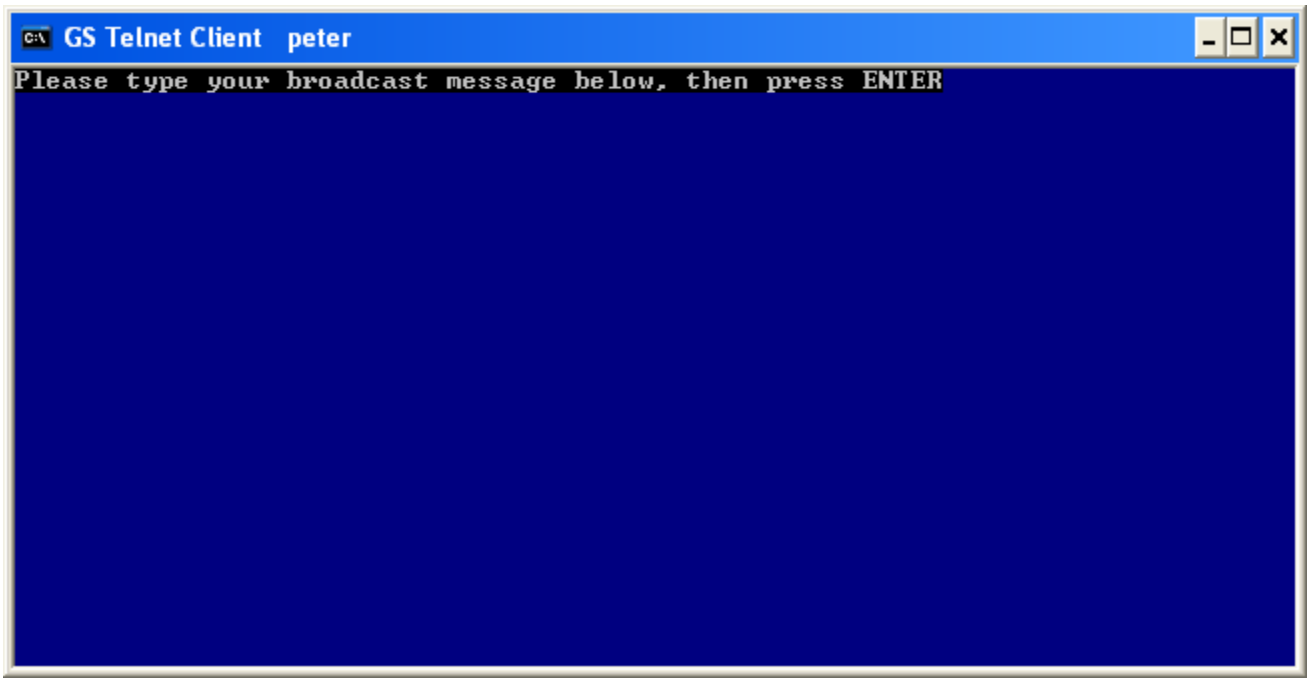


Figure 68: Enter broadcast message prompt.

Enter the text (up to a max of 320 characters) that you would like to send to all active SSH2/Telnet sessions.

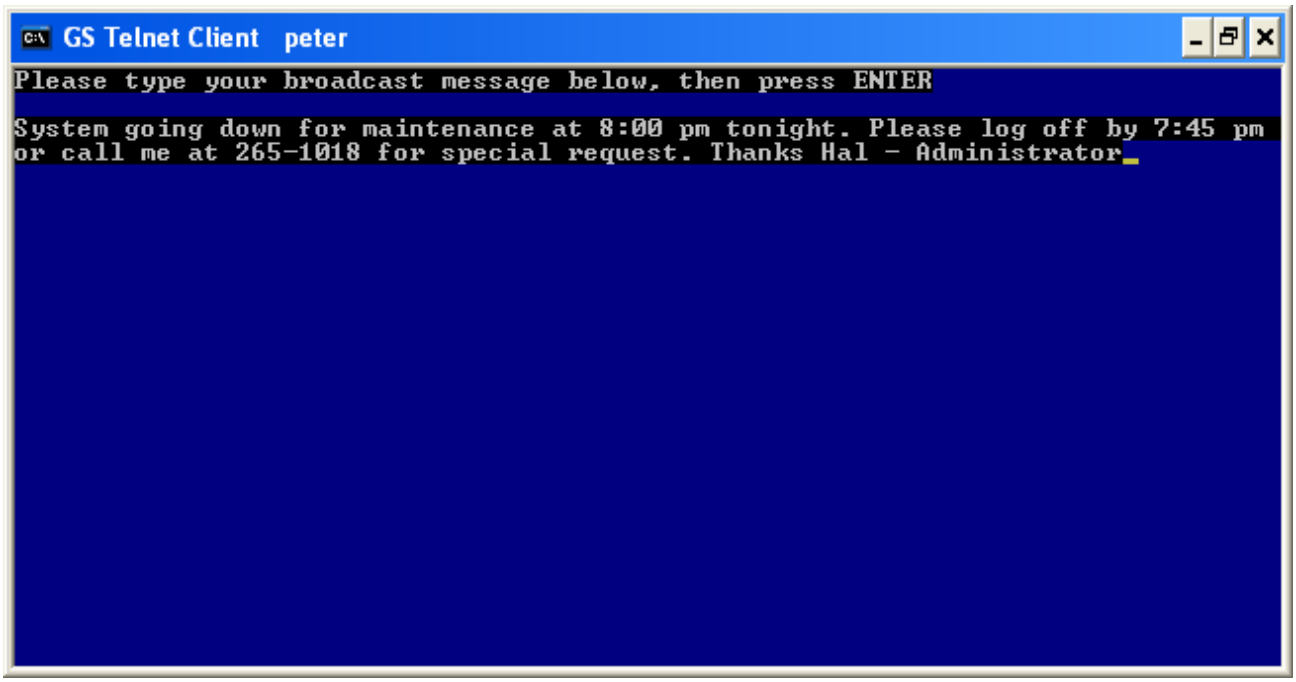

GS Telnet Client peter
Please type your broadcast message below, then press ENTER
System going down for maintenance at 8:00 pm tonight. Please log off by 7:45 pm
or call me at 265-1018 for special request. Thanks Hal - Administrator

Figure 69: Enter text of broadcast message.

Press <ENTER>

At this point you have an opportunity to abort or confirm the sending of the broadcast message.

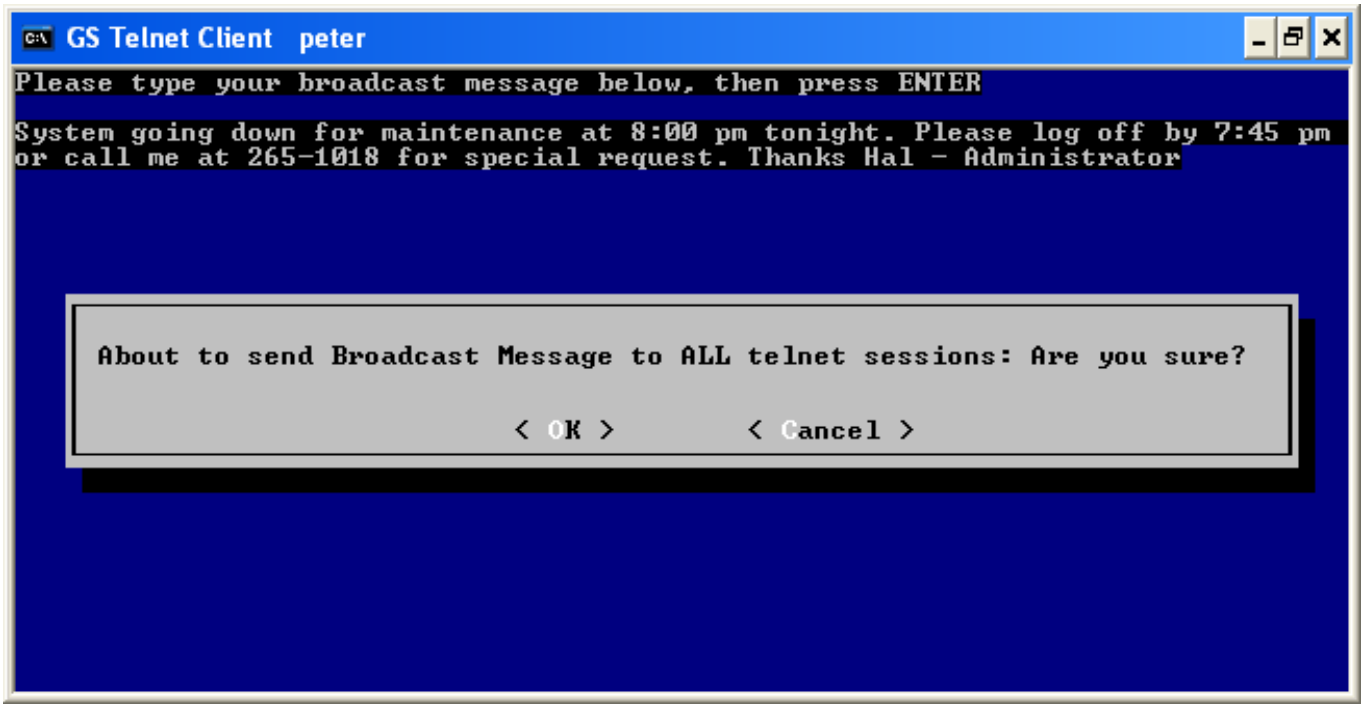

GS Telnet Client peter
Please type your broadcast message below, then press ENTER
System going down for maintenance at 8:00 pm tonight. Please log off by 7:45 pm
or call me at 265-1018 for special request. Thanks Hal - Administrator
About to send Broadcast Message to ALL telnet sessions: Are you sure?
< OK >
< Cancel >

Figure 70: Send broadcast message confirmation prompt.

Selecting <OK> will send the broadcast message to all active SSH2/Telnet sessions. The message will be displayed on the ***client terminal*** similar to the figure below. (Selecting <Cancel> will abort the broadcast message.)

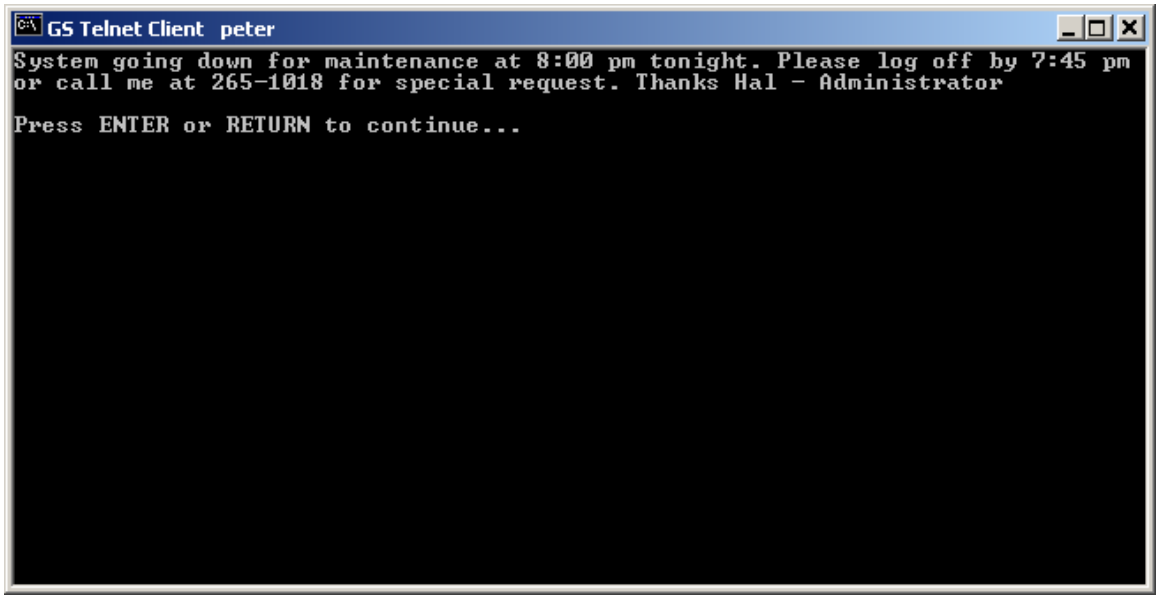

GS Telnet Client peter
System going down for maintenance at 8:00 pm tonight. Please log off by 7:45 pm
or call me at 265-1018 for special request. Thanks Hal - Administrator
Press ENTER or RETURN to continue...

Figure 71: Broadcast message display on client terminal.

The exact display of the broadcast message will conform to the specific terminal display characteristics in a typical manner. If the display has fewer columns, then the message will wrap at the end of each row, etc.

The broadcast message will remain on the client terminal until the message is acknowledged. The SSH2/Telnet client terminal display will return to the exact terminal display prior to the reception of the broadcast message after the broadcast message is acknowledged the message by depressing <RETURN> or <ENTER>.

If multiple broadcast messages are sent before previous messages are acknowledged, only the message acknowledged and the last broadcast message sent will be displayed to that particular SSH2/Telnet client. The intermediate messages will not be displayed to that session.

Broadcast a message to A SINGLE Telnet Session

There will be times that you will want to send a message to a specific SSH2/Telnet session rather than to all the active SSH2/Telnet sessions. To send a message to a single SSH2/Telnet session you must first select the user to send the message.

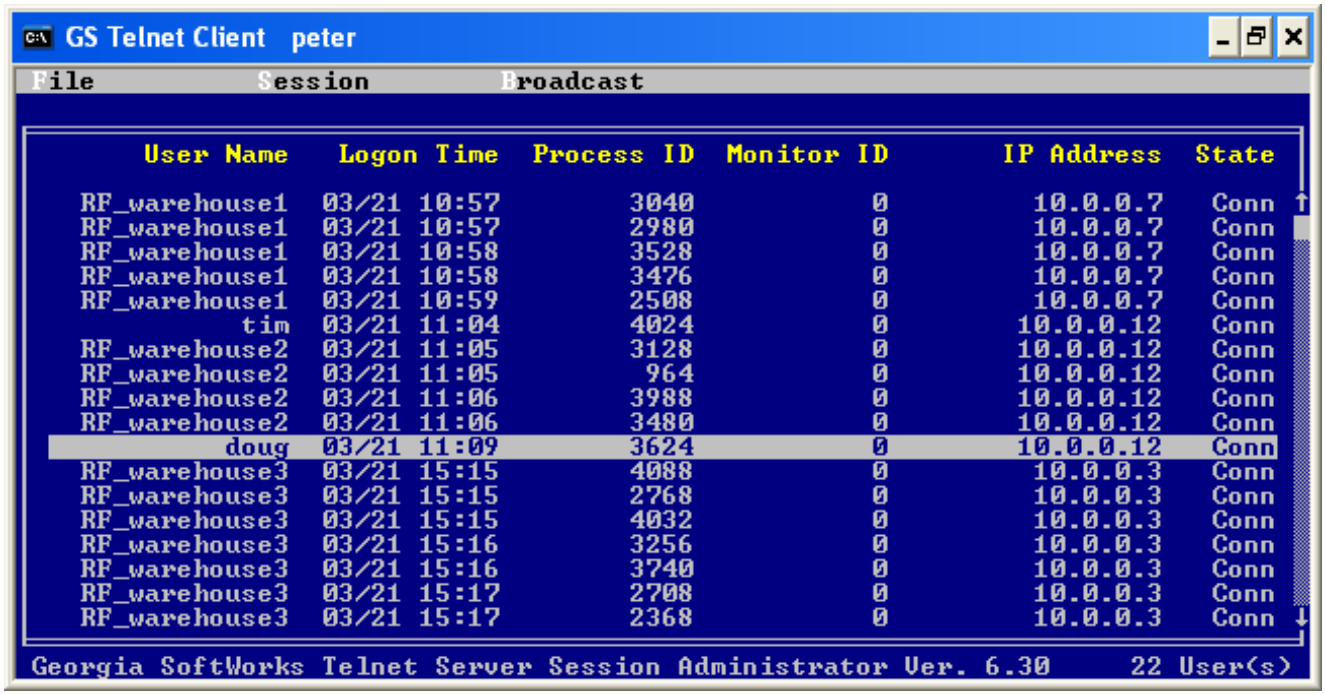

GS Telnet Client peter
File Session Broadcast
User Name Logon Time Process ID Monitor ID IP Address State
RF_warehouse1 03/21 10:57 3040 0 10.0.0.7 Conn
RF_warehouse1 03/21 10:57 2980 0 10.0.0.7 Conn
RF_warehouse1 03/21 10:58 3528 0 10.0.0.7 Conn
RF_warehouse1 03/21 10:58 3476 0 10.0.0.7 Conn
RF_warehouse1 03/21 10:59 2508 0 10.0.0.7 Conn
tim 03/21 11:04 4024 0 10.0.0.12 Conn
RF_warehouse2 03/21 11:05 3128 0 10.0.0.12 Conn
RF_warehouse2 03/21 11:05 964 0 10.0.0.12 Conn
RF_warehouse2 03/21 11:06 3988 0 10.0.0.12 Conn
RF_warehouse2 03/21 11:06 3480 0 10.0.0.12 Conn
doug 03/21 11:09 3624 0 10.0.0.12 Conn
RF_warehouse3 03/21 15:15 4088 0 10.0.0.3 Conn
RF_warehouse3 03/21 15:15 2768 0 10.0.0.3 Conn
RF_warehouse3 03/21 15:15 4032 0 10.0.0.3 Conn
RF_warehouse3 03/21 15:16 3256 0 10.0.0.3 Conn
RF_warehouse3 03/21 15:16 3740 0 10.0.0.3 Conn
RF_warehouse3 03/21 15:17 2708 0 10.0.0.3 Conn
RF_warehouse3 03/21 15:17 2368 0 10.0.0.3 Conn
Georgia SoftWorks Telnet Server Session Administrator Ver. 6.30 22 User(s)

Figure 72: Select a specific user to send a message.

In the case above we are selecting the user name "doug" to send the broadcast message. Once we have selected the user then we select the Session menu either by entering <ALT-S> or clicking the menu item Session. This will display the drop down which contains the item *Send Message (See* Figure 72 *)*.

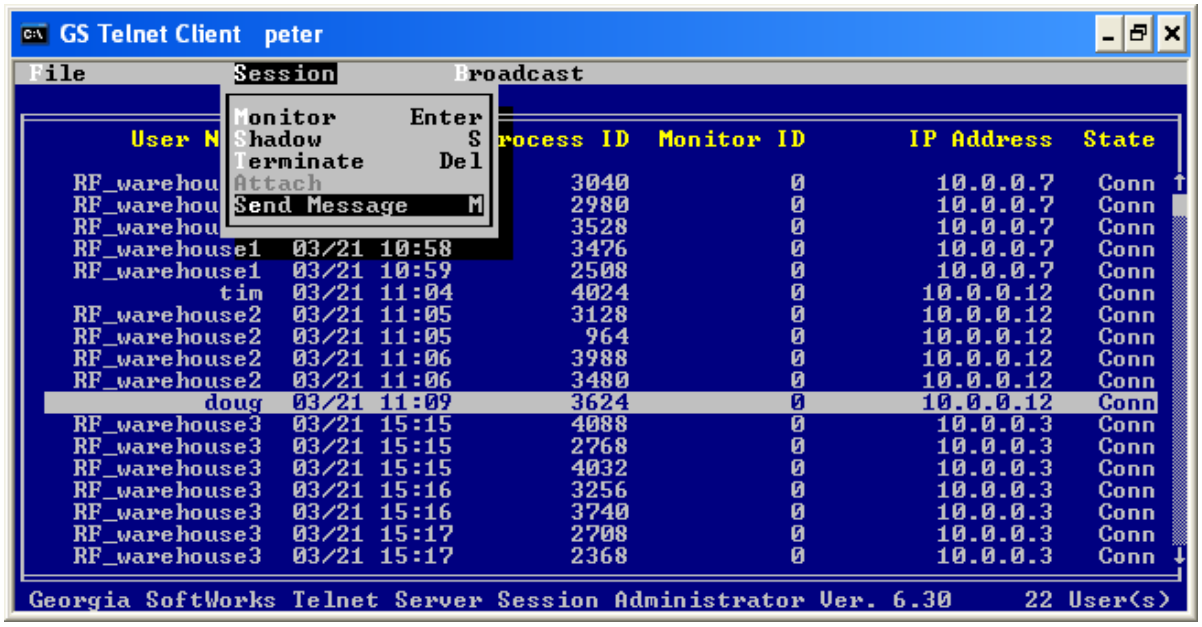

GS Telnet Client peter
File
Session
Broadcast
Monitor Enter
Shadow S
Terminate Del
Attach
Send Message M
User N
rocess ID
Monitor ID
IP Address
State
RF_warehou 3040 0 10.0.0.7 Conn
RF_warehou 2980 0 10.0.0.7 Conn
RF_warehou 3528 0 10.0.0.7 Conn
RF_warehouse1 03/21 10:58 3476 0 10.0.0.7 Conn
RF_warehouse1 03/21 10:59 2508 0 10.0.0.7 Conn
tim 03/21 11:04 4024 0 10.0.0.12 Conn
RF_warehouse2 03/21 11:05 3128 0 10.0.0.12 Conn
RF_warehouse2 03/21 11:05 964 0 10.0.0.12 Conn
RF_warehouse2 03/21 11:06 3988 0 10.0.0.12 Conn
RF_warehouse2 03/21 11:06 3480 0 10.0.0.12 Conn
doug 03/21 11:09 3624 0 10.0.0.12 Conn
RF_warehouse3 03/21 15:15 4088 0 10.0.0.3 Conn
RF_warehouse3 03/21 15:15 2768 0 10.0.0.3 Conn
RF_warehouse3 03/21 15:15 4032 0 10.0.0.3 Conn
RF_warehouse3 03/21 15:16 3256 0 10.0.0.3 Conn
RF_warehouse3 03/21 15:16 3740 0 10.0.0.3 Conn
RF_warehouse3 03/21 15:17 2708 0 10.0.0.3 Conn
RF_warehouse3 03/21 15:17 2368 0 10.0.0.3 Conn
Georgia SoftWorks Telnet Server Session Administrator Ver. 6.30 22 User(s)

Figure 73: Send a message to a specific user - Send Message dropdown.

Upon selecting `Send Message` you will see a screen similar to the figure below allowing entry of the message text. Note that the *User Name* (doug) of the user that will receive the broadcast message is identified in the prompt.

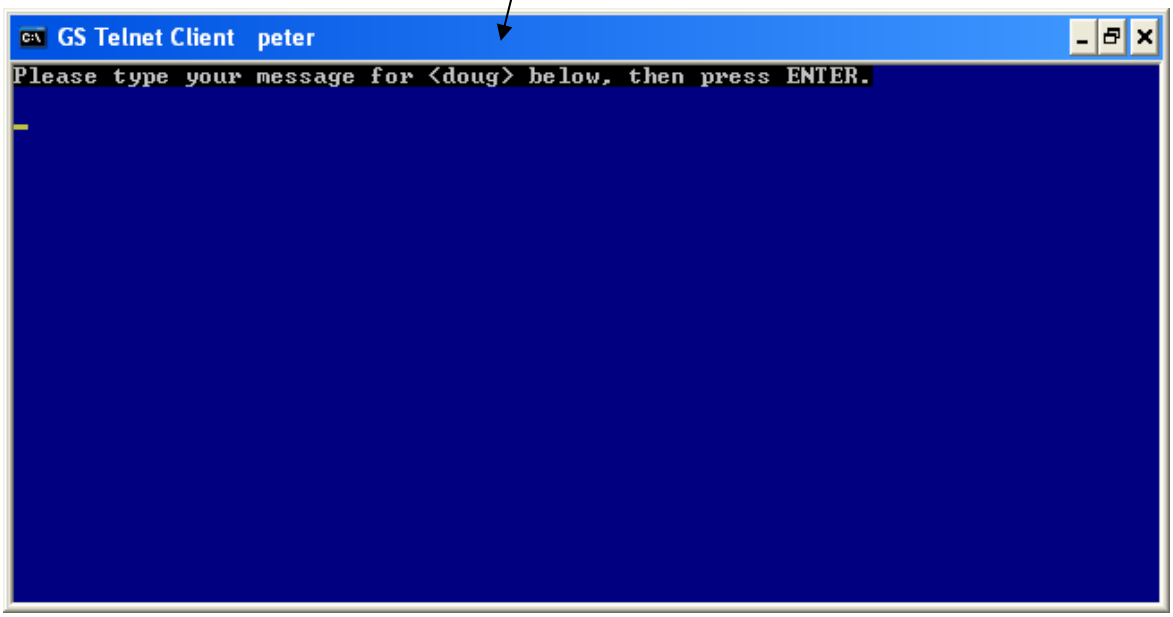


Figure 74: Enter broadcast message prompt destined to a specific user.

Enter the text that you would like to send to user *doug* and press enter when the message is complete.

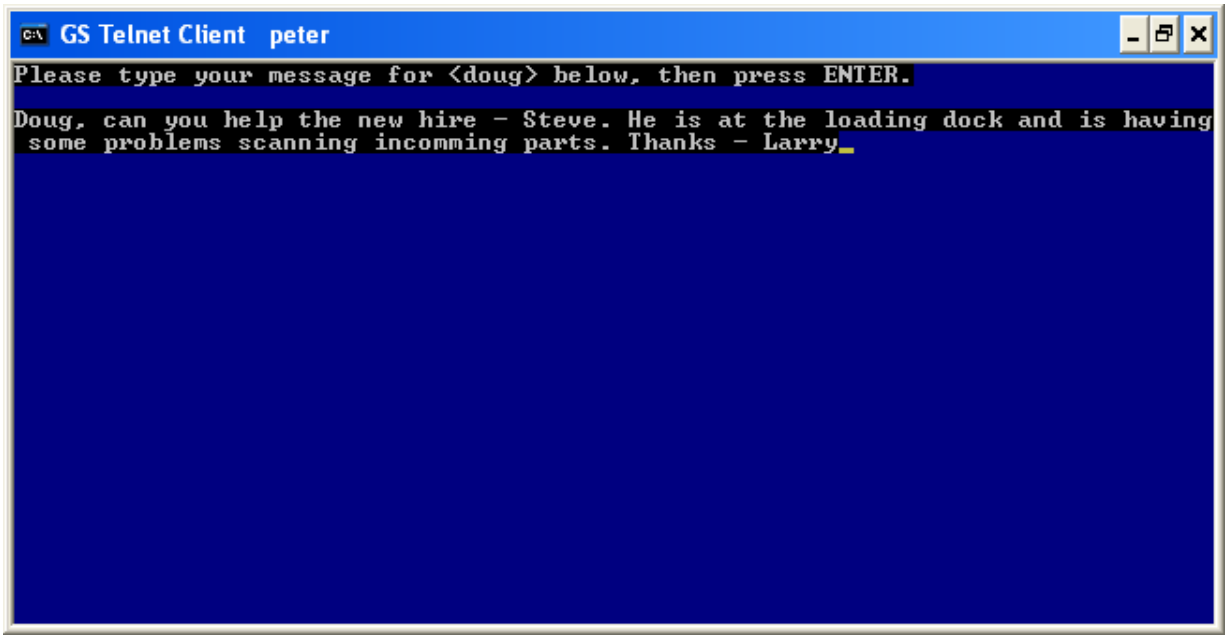

GS Telnet Client peter
Please type your message for <doug> below, then press ENTER.
Doug, can you help the new hire - Steve. He is at the loading dock and is having some problems scanning incomming parts. Thanks - Larry

Figure 75: Entering the broadcast message text to a single user.

At this point you have an opportunity to abort or confirm the sending of the broadcast message.

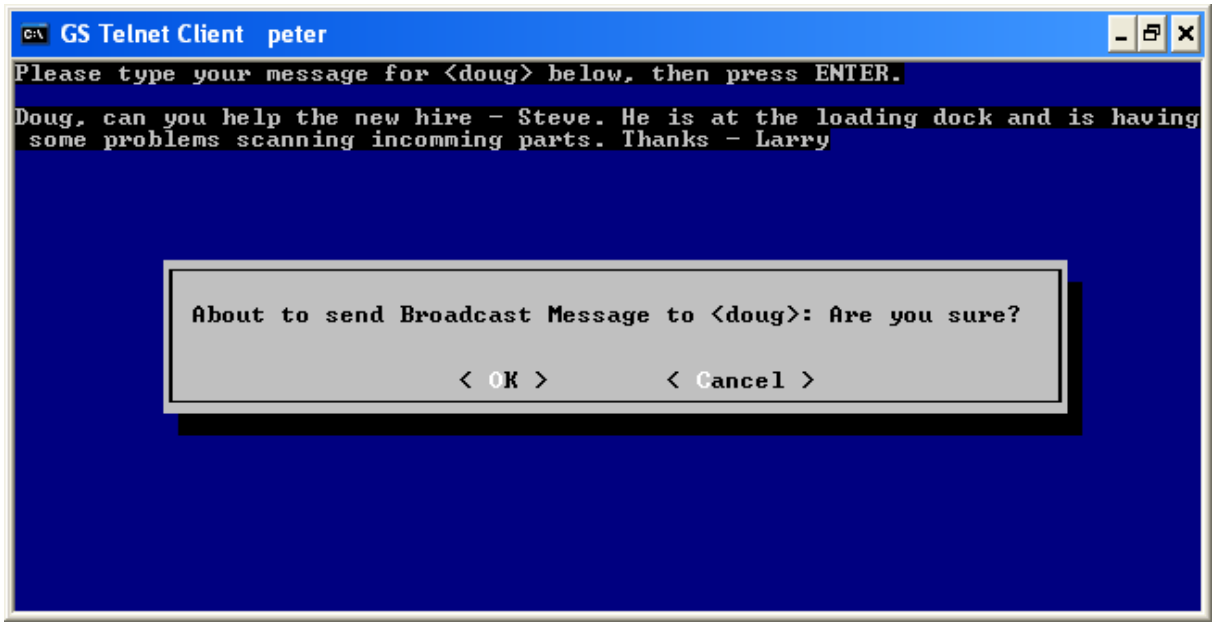

GS Telnet Client peter
Please type your message for <doug> below, then press ENTER.
Doug, can you help the new hire - Steve. He is at the loading dock and is having some problems scanning incomming parts. Thanks - Larry
About to send Broadcast Message to <doug>: Are you sure?
< OK >
< Cancel >

Figure 76: Send broadcast message to a specific user confirmation prompt.

Selecting <OK> will send the broadcast message to SSH2/Telnet user *doug*. Selecting <Cancel> will abort the broadcast message. The message will be displayed on the client terminal similar to the figure below.

Schedule a Broadcast Message

You can schedule a broadcast message using Georgia SoftWorks Broadcast command line utility and your favorite scheduling program.

The GSW Broadcast utility allows you to send a message to ALL active SSH2/Telnet sessions or to a specific session. You can identify the specific SSH2/Telnet session by User Name and/or IP Address. The text of the message that is sent is specified in an ASCII text file.

```
GS_BCast [-iip_address] [-uuser_name] file_path
```

Command: GS_BCast

Description: Command line utility that Broadcasts (sends) a text message to one or all active SSH2/Telnet sessions.

Syntax: `GS_BCast [-iip_address] [-uuser_name] <file_path>`

Arguments: There are 2 optional arguments and 1 required argument.

1. [`-i`*ip_address*] The `-i` parameter is followed by the IP address corresponding to the SSH2/Telnet session (or sessions) to send the broadcast message. (Optional)

2. [`-u`*user_name*] The –u parameter is followed by the user name corresponding to the SSH2/Telnet session (or sessions) to send the broadcast message. (Optional)

3. <file_path> - the path to the ASCII text file that contains the broadcast message. (Required)

If the `-i` and –u arguments are omitted then the broadcast will be sent to all active SSH2/Telnet sessions. These argument may be combined (as a Logical "OR" condition) to provide more flexibility in choosing the destinations for the broadcast message.

EXAMPLE – THE GSW BROADCAST UTILITY (SCHEDULE A BROADCAST MESSAGE)

Send the broadcast message contained in the ASCII text file "systemdown.txt:" which resides in the directory "C:\mybroadcastmessages\systemdown.txt" to all telnet sessions.

```
GS_BCast C:\mybroadcastmessages\systemdown.txt
```

EXAMPLE – THE GSW BROADCAST UTILITY – TO A SINGLE USER

Send the broadcast message contained in the ASCII text file "givemeacall.txt:" which resides in the directory "C:\mybroadcastmessages\givemeacall.txt" to user "*doug*"

```
GS_BCast -udoug C:\mybroadcastmessages\givemeacall.txt
```

The real power of the GSW Broadcast utility is that you can use your favorite scheduling program to schedule execution of the GSW Broadcast utility at a later time.

Georgia SoftWorks does not support nor endorse any scheduling programs. The ones mentioned below are listed as examples of scheduling utilities or programs that can be used to launch the GSW Broadcast utility. Most any scheduling program can be used to schedule the execution of the GSW Broadcast utility.

AT command – Native on Windows
The "AT" scheduling utility is available on Windows NT/2000/XP from the command shell. *The syntax of the AT command as described in the "Help AT" on Windows XP:* The AT command schedules commands and programs to run on a computer at a specified time and date. The Schedule service must be running to use the AT command. AT [\\computername] [[id] [/DELETE] | /DELETE [/YES]] AT [\\computername] time [/INTERACTIVE] [/EVERY:date[,...] | /NEXT:date[,...]] "command" \\computername — Specifies a remote computer. Commands are scheduled on the local computer if this parameter is omitted. id — Is an identification number assigned to a scheduled command. /delete — Cancels a scheduled command. If id is omitted, all the scheduled commands on the computer are canceled. /yes — Used with cancel all jobs command when no further confirmation is desired. time — Specifies the time when command is to run. /interactive — Allows the job to interact with the desktop of the user who is logged on at the time the job runs. /every:date[,...] — Runs the command on each specified day(s) of the week or month. If date is omitted, the current day of the month is assumed. /next:date[,...] — Runs the specified command on the next occurrence of the day (for example, next Thursday). If date is omitted, the current day of the month is assumed. "command" — Is the Windows NT command, or batch program to be run.
Graphical Utility for Windows 2000
Windows 2000 provides a graphical scheduling Wizard that gives you the options of scheduling tasks to run one time only, daily, weekly, or monthly either when your computer boots up or whenever you log on. The Wizard also gives you the option of setting a time for the program to start. To run the Windows 2000 scheduling Wizard: Step 1. Click on Start, Settings and then Control Panel. Step 2. Double-click on Scheduled Tasks. Step 3. Double-click on Add Scheduled Task to add a new task. Step 4. Windows 2000 will run the Scheduled Task Wizard. The Wizard will walk you through scheduling a program to run. **Note** 1: Go to the Advanced Properties to specify the command line arguments. Note 2: This utility also exists on Windows XP. The path to open the Wizard is slightly different.

Table 26 - GSW Broadcast Command Utility - Example Scheduling Programs

Exiting the Session Administrator

You may exit the Session Administrator either by the File then Exit Menu item or depressing the <ESC> key

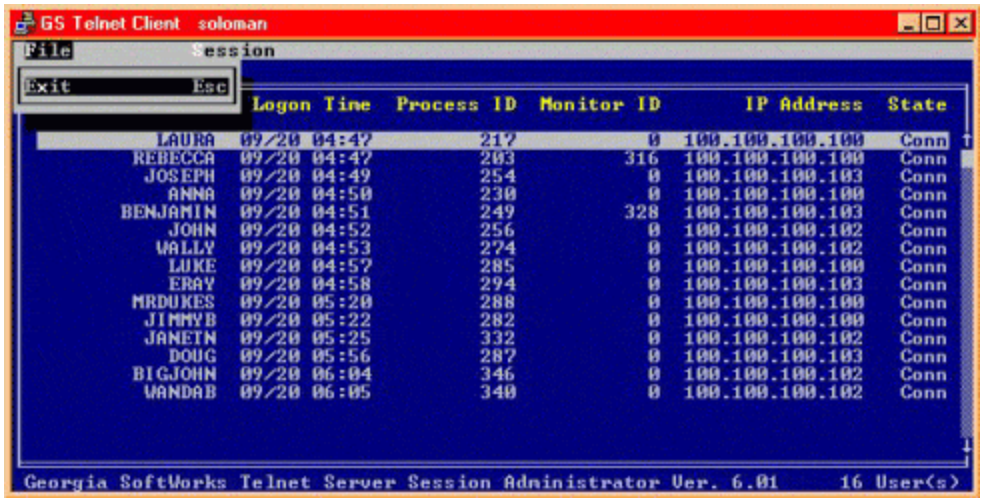


Figure 77: Session Administrator – Exiting

GS_ADMIN Command Line Options

Many of the Session Administrator features are available from the command line. The features available include Monitoring, Shadowing, and Terminating Session(s). Additionally you can create an ASCII text file on demand that will contain a snapshot of the information contained on the Session Administrator main screen.

The GS_ADMIN command line utility provides the capability to launch Session Monitoring or Session Shadowing etc. from your own application. Command line arguments are used to specify the operation (feature) and the session to perform the operation on.

Command: GS_ADMIN

Description: Command line utility that performs GS_ADMIN functions.

The gs_admin command line utility has three possible syntaxes.

Syntax 1: GS_ADMIN `[/m|/s|/t] [/pPID]|[ [/iIP]|[/uUser] ] [/k]`

Syntax 2: GS_ADMIN `[/T] [/k]`

Syntax 3: GS_ADMIN `[/I[Infofilename]] [/k]`

Arguments: The number of arguments depends on the operation selected.

```
/m    is for monitoring
/s    is for Shadowing
/t    is to terminate a specific session
/T    is to terminate all sessions
/p    select by Process ID (PID)
/i    select by client's IP Address
/u    Select by user's name
/k    keep running gs_admin after completion of the operation
      This argument is valid with all 3 syntax formats.
/I    is to create a snapshot of the SSH2/Telnet Status information in
      the file gs_ainfo.txt (default) or specified filename.
```

Syntax 1 is used to Monitor, Shadow or terminate a specific session

Syntax 2 is used to Terminate ALL SSH2/Telnet sessions

Syntax 3 is used to obtain a snapshot of the SSH2/Telnet server status information.

Note: Syntax formats not listed have undetermined results.

Syntax 1 – Monitoring/Shadowing/Terminating a specific session

Choose the operation (monitor, shadow, terminate) for the SSH2/Telnet session.

Next select one of the following `[/pPID]|[ [/iIP]|[/uUser] ]` to Filter the session.

```
/pPID       Filter based on Process ID (PID). Where PID is the
            Process Id of the desired session. Each session will have
            a unique process id.
OR

/iIP        Filter based on the IP address
/uUser      Filter based on the User Name
```

Note: You may use either or both of the IP Address and User Name filter arguments.

EXAMPLE – THE GSW GS_ADMIN COMMAND LINE UTILITY – SYNTAX 1 - MONITOR

The following is the syntax to use the GS_ADMIN command line utility to launch the Session Monitor for User "Doug".

```
GS_ADMIN /m /uDoug
```

EXAMPLE – THE GSW GS_ADMIN COMMAND LINE UTILITY – SYNTAX 1- SHADOW

The following is the syntax to use the GS_ADMIN command line utility to launch the Session Shadowing for for User "david" with IP Address 10.110.244.103.

```
GS_ADMIN /s /udavid /i10.110.244.103
```

EXAMPLE – THE GSW GS_ADMIN COMMAND LINE UTILITY – SYNTAX 1 - TERMINATE

The following is the syntax to use the GS_ADMIN command line utility to terminate Session with user name Doug.

```
GS_ADMIN /t /uDoug
```

Syntax 2 – Terminate All Telnet/SSH2 Sessions

The `/T` operation does not use any additional arguments. This command terminates all SSH2/Telnet sessions.

EXAMPLE – THE GSW GS_ADMIN COMMAND LINE UTILITY – SYNTAX 2 - TERMINATE ALL SESSIONS

The following is the syntax to use the GS_ADMIN command line utility to terminate ALL SSH2/Telnet sessions.

```
GS_ADMIN /T
```

Syntax 3 – Obtain a snapshot of the SSH2/Telnet Server Status

The /I operation creates the file gs_ainfo.txt that contains the current status information for the GSW SSH2/Telnet Server. The file is created in the root GSW SSH2/Telnet Server installation folder. The file contains similar information as displayed in the Session Administrator main screen.

EXAMPLE – THE GSW GS_ADMIN COMMAND LINE UTILITY – SYNTAX 3 – STATUS #1

The following is the syntax to use the GS_ADMIN command line utility to create the GSW SSH2/Telnet Server Status Information file.

```
GS_ADMIN /I
```

You can also specify the filename and path for the information file.

EXAMPLE – THE GSW GS_ADMIN COMMAND LINE UTILITY – SYNTAX 3 - STATUS #2

The following is the syntax to use the GS_ADMIN command line utility to create the GSW SSH2/Telnet Status information file and put it in the file folder `c:\telnetstatus\time` with the filename `mondaynoon.txt`

```
GS_ADMIN /IC:\telnetstatus\time\mondaynoon.txt
```

Information File Layout

The file uses standard Windows ***ini*** format rules.

```
[File Info]
Version=1.1
GSWTelnetServerVersion=6.31.0010
CreationTime=09/26/03 16:18:42

[Counters]
UserCount=2

[Users]
User0=test1,09/26/03 16:18:22,3800,0,192.168.0.6,Conn
User1=luke,09/26/03 16:18:31,2312,0,192.168.0.6,Conn
```

Session Monitoring Uses

There are many uses for session monitoring. A few are listed.

- Quality Assurance - A supervisor can monitor data entry of employees.
- Training - A senior application user can remotely help a trainee understand and use an application.
- Debugging - A developer can remotely observe an application phenomenon that a user is describing.
- Administrative - A system administrator can ensure that users are using/setting up resources properly.
- Security - Administrator monitor users that are using SSH2/Telnet.
- Terminating Sessions that have been abandoned.
- Terminating Sessions that are connected to applications which are behaving abnormally etc.
- Attaching to Suspended Sessions
- Shadowing another Session

GSW Event Logging

The Georgia SoftWorks SSH2/Telnet Server for Windows NT/XP/VISTA/2000/2003/2008 provides the System Administrator with useful SSH2/Telnet Server Activity information that can be used for generating reports. The System Administrator can enable or disable various events that are logged. The logged information is in an easy to import ASCII comma delimited format.

Two files are of interest

1. The log definition file: `gsw_ldef.txt` *and*
2. The actual log file `gsw_elog.txt`

Event Log Definition File:

The configuration file `gsw_ldef.txt` specifies the events that are maintained in the log file. This file resides in the SSH2/Telnet server installation directory. Usually this is c:\gs_uts. Each event that can be logged is listed together with its description.

The format of this file is:

Event ID <space> Group ID <space> Description of the event

The "#" character is the comment symbol. Insert a "#" character in column 1 of a line to disable the logging of a specific event. Enabling or Disabling the logging of specific events are the only allowed modifications to this file.

The Default configuration for `gsw_ldef.txt` is:

```
1  100 Session Created
2  100 Session Suspended
3  100 Session Reconnected
4  100 Session Exited Normally
5  100 Session Exited Abnormally
6  100 Logon Failed
7  200 Print Job Redirected
8  400 File transferred (put)
9  400 Print File transferred (get)
10 500 Command execution event sent to client
```

If you do not want to log Print Jobs and Failed Logons you would insert the # as the first character of those events.

```
1 100 Session Created
2 100 Session Suspended
3 100 Session Reconnected
4 100 Session Exited Normally
5 100 Session Exited Abnormally
#6 100 Logon Failed
#7 200 Print Job Redirected
8  400 File transferred (put)
9  400 Print File transferred (get)
10 500 Command execution event sent to client
```

NOTE: The event ids and descriptions in the file cannot be changed.

Event Log File

The log file is a comma-delimited text file where the activity events are actually stored. By default the maximum size of log file `gsw_elog.txt is` 1 megabyte. Once the file has reached the maximum size the file is renamed to `gsw_elog.bak` and starts logging in a new `gsw_elog.txt.` This actually provides up to 2 megabytes of log information to the administrator. The size of the `gsw_elog.txt` can be changed in the registry (See page 157).

The GSW Event Log resides in the "Log" subdirectory of the Installation folder in a comma-delimited file with the name `gsw_elog.txt.`

Georgia SoftWorks Event Log File Name: `gsw_elog.txt`

The format of the comma-delimited file is as follows.

Field Description	Data Type	Description
Event ID	Integer	
Event Group ID	Integer	Useful for Filtering with Reports
Login Id	Text	Quoted Text Field
Domain	Text	Quoted Text Field
Session ID	Text	Quoted Text Field
Time Stamp	Date/Time	YYYY-MM-DD HH:MM:SS
Client Type	Integer	0 = 3rd Party, 1 = Georgia SoftWorks
Encrypted Session	Integer	0 = Not Encrypted, 1 = Encrypted
Event Specific Integer	Integer	
Event Specific Text	Text	Quoted Text Field

Table 27 - GSW Event Log File Format

An example of the data in the gsw_elog.txt file may look like:

```
7,200,'Laura','.','1E339C27B99',2000-09-15 15:42:22,1,0,1326,''

1,100,'Rebecca','.','1E439C27BCD',2000-09-15 15:43:09,1,0,0,''

6,100,'Joseph','.','5A39C27C2C',2000-09-15 15:44:52,1,0,1326,''

1,100,'Anna','.','17F39C27C39',2000-09-15 15:45:03,1,0,0,''

1,100,'benjamin','.','12C39C27C66',2000-09-15 15:45:47,1,0,0,''

4,100,'John','.','1E439C27BCD',2000-09-15 15:46:07,1,0,0,''

5,100,'Wally','.','12C39C27C66',2000-09-15 15:46:37,1,0,0,''

1,100,'Luke','.','12C39C27C66',2000-09-15 15:46:51,1,0,0,''

2,100,'RaySpurg','.','12C39C27C66',2000-09-15 15:47:00,1,0,0,''

3,100,'Doug','.','12C39C27C66',2000-09-15 15:47:12,1,0,0,''

3,100,'Wanda','.','17F39C27C39',2000-09-15 15:47:20,1,0,0,''
```

Defined Events are:

Event Id	Event Group ID	Name
1	100	Session Created
2	100	Session Suspended
3	100	Session Reconnected
4	100	Session Exited Normally
5	100	Session Exited Abnormally
6	100	Logon Failed
7	200	Print Job Redirected
8	400	File Transferred via GS_PUT
9	400	File Transferred via GS_GET
10	500	Command execution event sent to client

Table 28 - Defined Log Events

Modify the Log File Size

This is how to change the registry key for the size of the Log File. The size is specified in bytes and the default is 1000000.

Note: (you must be on the Windows NT/XP/VISTA/2000/2003/2008 system that the Georgia SoftWorks SSH2/Telnet Server is installed. However you may connect to the Windows NT/XP/VISTA/2000/2003/2008 Registry from a remote location).

The key is:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\GS_Tnet\Parameters\ActivityLogFileLength
```

1. Click the **Start** button at the bottom left corner of your screen.
2. Click **RUN**
3. Type `REGEDT32`
4. Click **OK**
5. Select Windows item **HKEY_LOCAL_MACHINE**
6. Select the menu item **Edit**
7. Move the mouse pointer and click **Find**
8. Type **`ActivityLogFileLength`**
9. Click on **Find Next**
10. Select the menu item **Edit** and then click on **Modify**
11. Enter the new value for the ActivityLogFileLength and click **OK**

The new Activity Log File Length will take effect.

Logon Scripting

Logon Scripting is an advanced feature that allows the system administrator unmatched control over the user sessions. Associated with each User Login is a directory that will execute batch files upon connection[22]. Logon Scripting provides automatic execution of the batch file upon the login of the user. Logon scripts are often used to map drives, establish network connections, change directories, set environment variables, run TSR's and launch applications. When an application is launched via a logon script the User is automatically deposited into the application upon successful logon.

One of two optional batch files can be executed. One is named `k_start.bat` and the other is `c_start.bat`. Each batch file provides a unique behavior upon completion of the batch file.

- `k_start.bat` - This file runs upon connection and after its completion the user may get the system prompt.

- `c_start.bat` - This file runs upon connection and after its completion the session terminates. *This can be used to restrict the user to a certain application.* Even if the user executes a `control-c` or something similar this will not allow access other than what is specified in the batch file on the Windows NT/XP/VISTA/2000/2003/2008 computer.

Logon Scripts can be defined on a User, Global, or IP address basis. If a logon has IP Address based Logon scripts defined then they are executed. Otherwise the GSW Universal Terminal Sever determines if a User ID based logon script exists. If so then it is executed. Otherwise if a Global Logon scripts exists then it is executed.

USER Logon Scripts

A different Logon script can be set up for each User Id. This allows Users that to have individually defined batch files to accommodate different requirements of Users. The batch files are **created** and set up by the system administrator for each user in the system. They must be in the directory

"InstallationPath\scripts\UserLoginID\k_start.bat" or

"InstallationPath\scripts\UserLoginID\c_start.bat"

Of course *InstallationPath* and *UserLoginID* are replaced with the actual values.

If both `k_start.bat` and `c_start.bat` exist then only `c_start.bat` is executed. You may call `k_start.bat` from `c_start.bat`. If the UserLogonID script folder does not exist, then the GSW UTS will determine if a Global Logon script exists.

The system administrator must ensure that the directory permissions for the above files and directories are correct. Remember the user and the SYSTEM must be able to read the batch file. They are executed in the security context of the user.

[22] If the batch files exist.

EXAMPLE - LOGON SCRIPTING: AUTOMATIC EXECUTION OF A PROGRAM UPON CONNECTION

Here is an example script to allow automatic execution of a Physician's Office Application "medical.exe" upon connection for the user login id (nurse). The Physicians office application is in the directory c:\medical.

Step 1. Create directory

```
c:\gs_uts\scripts\nurse
```

Step 2. Create batch file `k_start.bat`

Step 3. Add line to k_start.bat

```
c:\medical\medical.exe
```

Step 4. Save file and exit.

Now when the User login id "nurse" connects to the Windows NT/XP/VISTA/2000/2003/2008 system via SSH2/Telnet the application medical.exe will automatically be started. When the user exits the medical package, the Windows NT/XP/VISTA/2000/2003/2008 Command line prompt is displayed allowing other activity to occur.

EXAMPLE - LOGON SCRIPTING: USER RESTRICTED TO EXECUTE ONLY A SPECIFIC PROGRAM.

Here is an example script that will allow the User login id (bill) only to execute the amortization program amortize.exe. The amortization program resided in the directory d:\amor

Step 1. Create directory

```
c:\gs_uts\scripts\bill
```

Step 2. Create batch file c_start.bat

Step 3. Add line to `c_start.bat`

```
d:\amor\amortize.exe
```

Step 4. Save file and exit.

Now when the User Login ID "bill" connects to the Windows NT/XP/VISTA/2000/2003/2008 system via SSH2/Telnet the application amortize.exe will automatically be executed. When the user exits the amortization package, the SSH2/Telnet session will terminate.

Global Logon Scripts

There are situations where the system administrator may want to have the same logon script executed by all the users upon connection. Instead of **creating** a logon script for each and every user, a single logon script can be **created** that will be executed by all users upon connection. The Global Logon script operates in the same manner as a normal logon script except for the location of the script files. The system administrator may put the `k_start.bat` or `c_start.bat` file in the subdirectory SCRIPTS (under the install directory). The server looks first for `k_start.bat` or `c_start.bat` in user's subdirectory and will not use the global script if it can find user's script.

EXAMPLE - GLOBAL LOGON SCRIPTING: AUTOMATIC EXECUTION OF A PROGRAM UPON CONNECTION BY ALL USERS

Here is an example script to allow automatic execution of a Physician's Office Application "medical.exe" upon connection for *ALL* users that do not have a `c_start.bat` or `k_start.bat` in their logon script directory. The Physicians office application is in the directory `c:\medical`.

Step 1. Create batch file `k_start.bat` in the SCRIPTS directory (under the install directory).

Step 2. Add line to `k_start.bat`

```
c:\medical\medical.exe
```

Step 3. Save file and exit.

Now when any user (unless they have their own login script in their logon script directory) connects to the Windows NT/XP/VISTA/2000/2003/2008 system via SSH2/Telnet the application medical.exe will automatically be started. When the user exits the medical package, the Windows NT/XP/VISTA/2000/2003/2008 command line prompt is displayed allowing other activity to occur.

IP Address Based Logon Scripts

The capability to define different logon scripts based on the IP Address of the client logging on is another advanced feature pioneered by GSW. System Administrators may have specific mapping requirements or specific applications that must be launched depending on the location of the User that is logging on. In many cases it is easier to identify the location by IP addresses rather than User IDs. Another case may be where a User is routinely working in different locations with specific logon script requirements for each location. Another could be where different devices access different applications, regardless of the user connected. There are many other cases where IP Address based logon scripting can be used.

Associating the Logon Script to use with the IP Address is configured using the `gs_ip_rt.txt file`. IP Addresses can be specified as individual IP address or IP address ranges. Additionally wildcards can be used. For each entry in the `gs_ip_rt.txt` file two fields are specified: The IP Address (or range) and the name of the login script to use. A file `gs_ip_rt.txt` is installed when the GSW UTS is installed. It contains examples that are commented out to help you get started.

Notice the file in the GSW UTS installation directory:

```
gs_ip_rt.txt
```

The file must reside in the Georgia SoftWorks Windows Universal Terminal Server installation directory.

NOTE: The System account must have permission to read the `gs_ip_rt.txt` file.

The file `gs_ip_rt.txt` is used for configuration of the association of IP Addresses and Logon Scripts.

The rules are simple for setting up the `gs_ip_rt.txt` file.

- It is a text file
- The # character is the comment character
- Each entry **must** start in the first column.
- Each entry consists of the IP Address (or IP Address Range) and the associated logon script filename (page 162). The logon script file must be located in the GSW UTS scripts folder.
- The IP Address and the Logon Script are separated by a single space.

IP Address Syntax. Use the industry standard 4 part syntax: format `nnn.nnn.nnn.nnn` when specifying the IP Address.

Example: `10.1.1.1`

An example entry in the `gs_ip_rt.txt` file would look like:

```
10.1.1.1 k_logon70.bat
```

The above entry would instruct the system that when a user connects from the IP address `10.1.1.1` the logon script `k_logon70.bat` should be used.

IP Address Range Syntax: An IP address range is specified as two IP addresses separated by the dash character `'-'`. No spaces are allowed. Below are two examples.

Example A: `10.1.1.1-10.1.10.210`

Example B: `192.68.22.10-192.68.22.99`

An example IP Address range entry in the `gs_ip_rt.txt` file would look like:

```
192.68.22.10-192.68.22.99 k_buildingN.bat
```

The above entry would instruct the GSW UTS that when user connects from any IP address that falls in the range from `192.68.22.10` to `192.68.22.99` the logon script `k_buildingN.bat` should be used.

IP Address Wild Cards: An IP address wild card is specified with the `'*'` character. Wild cards can be used in place of one or more of the four parts of the IP Address.

Example A: `10.0.0.*`

Example B: `192.*.*.5`

Wild Cards can be used in IP Address Ranges too.

Logon Script Filename: The logon script filename associated with the IP address can be any name that you choose however it must start with either a `k_` or a `c_`. The '`k_`' and '`c_`' correspond to the analogous behavior as the `k_start.bat` and `c_start.bat` (See page 158).

EXAMPLE – IP BASED LOGON SCRIPTING

The ACME Company has a New York location and a Mexico location. The New York location has a north building that has a receiving dock, a manufacturing floor and a shipping dock. Each area uses different applications to update a common database. The Receiving dock uses fork lifts with vehicle mounted RF devices. The application used by the receiving dock is a custom developed application. The ACME manufacturing floor workers use hand held RF devices, mostly basic scanner guns. The Quality Assurance Engineers on the manufacturing floor use Pocket PC 2003 devices to enter comments and other information. The Quality Assurance Engineers use a different application than the manufacturing floor workers. The New York Shipping dock workers use hand held RF devices, again mostly basic scanner guns. Like before they have yet another custom application. The shipping dock workers and the manufacturing floor workers are multi-talented and can perform either duty. The ACME Mexico location in Seaside ships partially assembled components to the New York locations.

All the locations are connected to a single server running the 100 session copy of the GSW UTS. The system administrator needs to launch a different application for each group described above.

This is can be accomplished using GSW UTS Logon Scripting based on IP Addresses. We can start editing the `gs_ip_rt.txt` file, but first let's make a chart of the locations, the IP addresses and the logon scripts.

The chart on the next page contains the information needed to set up the IP Based Logon scripting.

Location Name	IP Address or Range		Logon Script
ACME New York North Building Receiving Dock	164.10.15.1 164.10.15.211 164.10.15.212 164.10.15.213 164.10.15.214 164.10.15.215 164.10.15.216 164.10.15.217 164.10.15.218 164.10.15.219	164.10.15.220 164.10.15.221 164.10.15.222 164.10.15.223 164.10.15.224 164.10.15.253 164.10.15.226 164.10.15.254 164.10.15.228 164.10.15.229 164.10.15.255	c_nynrcv.bat
ACME New York North Building Manufacturing Floor Guns	164.10.16.1 164.10.16.10 164.10.16.11 164.10.16.12	164.10.16.23 164.10.16.23 164.10.16.24 164.10.16.25	c_nynman.bat
ACME New York North Building Manufacturing Floor Quality Assurance Guns	164.10.16.50 164.10.16.60 164.10.16.70 164.10.16.80	164.10.16.90 164.10.16.100	c_nynqua.bat
ACME New York North Building shipping Guns	164.14.12.210 164.14.102.211 164.14.245.212 164.14.246.213 164.14.247.214	164.14.15.220 165.14.19.1 165.14.150.222 165.14.151.223 165.14.178.224	c_nynsh.bat
ACME Mexico Seaside Plant shipping Guns	242.10.150.5 242.10.160.5 242.10.170.5 242.10.180.5 242.10.190.5	242.10.191.5 242.10.192.5 242.10.192.5 242.10.194.5	c_mexpl.bat

Table 29 - IP Based Logon Scripting Information Table

This is how to set up the `gs_ip_rt.txt` file to associate IP Addresses and Logon Scripts.

Edit the file `gs_ip_rt.txt` and add the following lines.

```
#ACME North Building Receiving Dock
164.10.15.1 c_nynrcv.bat
164.10.15.211-164.10.15.255 c_nynrcv.bat
#
#ACME North Building Manufacturing Floor
164.10.16.1-164.10.16.25 c_nynman.bat
#
#ACME North Building Manufacturing Floor Quality Assurance
164.10.16.50-164.10.16.100 c_nynqua.bat
#
#ACME North Building Manufacturing Floor Shipping
164.14.*.* c_nynshi.bat
#
#ACME Seaside Plant Shipping Guns
242.10.*.5 c_mexpl.bat
```

Each time a User Logs on, the GSW Universal Terminal Server identifies the IP address of the User and executes the associated logon script.

A sample gs_ip_rt.txt file with examples is installed with the software. It can be easily modified and used for your purposes. This is a copy of the file.

```
# Georgia SoftWorks UTS IP-based selection of logon scripts
# Copyright (C) 2004 Georgia SoftWorks
# All Rights Reserved
#
#
# This file allows you to map client IP addresses to logon scripts.
# The order of fields is as follows:
#
#       IP address OR IP address range OR IP address with wildcards
#       k_logon_script_name OR c_logon_script_name
#
# The 'k_' and 'c_' correspond to behavior analogous to k_start.bat and
# c_start.bat respectively.
#
# Each entry must start in the first column.
#
# For example, the following entry below
# (the comment ‘#’ character must be removed to activate the entry)
#
#63.80.112.70 k_logon70.bat
#
# instructs the system that when a user connects from the IP address
# 63.80.112.70 he should use the logon script k_logon70.bat
#
#
# IP address ranges
#
# An IP address range is specified as two IP addresses separated by
# the dash character '-'.
#
# Examples of IP address ranges
#
# 10.1.1.1-10.1.10.210
# 192.68.22.10-192.68.22.99
#
#
# IP address with wildcards
#
# An IP address with wildcards is specified by using the star character
# '*' instead of a number as one of four segments of an IP address
#
# Examples of IP addresses with wildcards
#
# 10.*.*.*
# 192.*.*.22
#
# Note:
# For security reasons this file's permissions should be set to allow only
#
# SYSTEM - read access
#
# No other accounts should be allowed to access this file.
```

Programmatic Access to the SSH2/Telnet Server

Note: Programming skills may be required to understand the following section.

Developers may take advantage of the programmatic interface to the Georgia SoftWorks SSH2/Telnet Server for Windows NT/XP/VISTA/2000/2003/2008. Programmatic, language independent access to the SSH2/Telnet Server allows developers to write an application that (when run under the SSH2/Telnet Server environment) takes control of its input and/or output from/to the client. This can be utilized to create a custom or highly specialized communications application. The SSH2/Telnet Server still maintains critical functionality such as logon, security, application launch and termination. Normally the application before it terminates will release control to the SSH2/Telnet server.

The SSH2/Telnet Server communicates with the client through a WINSOCK socket. A protocol/mechanism is provided that allows a custom application to take and release control of the socket. Objects involved in taking and releasing control of the socket are passed through environment variables as are described below.

- GWTN_HSOCKET - This environment variable holds the value of the handle of the open socket. Note: Never close or otherwise destroy the socket.

- GWTN_GET_I - This environment variable holds the name of the WIN32 event that when signaled notifies the SSH2/Telnet server that the custom application wants to *take* control of the *input from* the client.

- GWTN_RLS_I - This environment variable holds the name of the WIN32 event that when signaled notifies the SSH2/Telnet server that the custom application wants to *release* control of the *input from* the client.

- GWTN_GET_O - This environment variable holds the name of the WIN32 event that when signaled notifies the SSH2/Telnet server that the custom application wants to *take* control of the *output to* the client.

- GWTN_RLS_O - This environment variable holds the name of the WIN32 event that when signaled notifies the SSH2/Telnet server that the custom application wants to *release* control of the *output to* the client.

- GWTN_ACK - - This environment variable holds the name of the WIN32 event that when signaled notifies the custom application that the request is granted.

Note1: All of the above mentioned events are autoreset events.

Note2: The above environment variables are automatically injected into the session's environment and will vary from session to session. Please do not attempt to modify those variables or set them in the autoexec files or Control Panel/System/Environment.

Please see the file `interface.c` included on the installation disks for a code sample. `interface.c` contains a short program that takes control of the input and output and echoes characters to the client until a lowercase *q* is encountered.

True Client Side Printing - Printing the way you want it!

The Georgia SoftWorks SSH2/Telnet Server for Windows NT/XP/VISTA/2000/2003/2008, *True Client Side Printing* allows documents to be printed at locations that are easily accessible by each user. Traditionally, default printing using SSH2/Telnet is always local to the server. This can be inconvenient to the user. Georgia SoftWorks overcomes the traditional problem by providing *True Client Side Printing - printing the way you want it.*

Multiple (up to 9) printers may be used on a *per user basis*. Georgia SoftWorks offers several printing methods for the SSH2/Telnet user that will address most printing requirements. They are

- **Default** - Works as if the SSH2/Telnet user is sitting at the Windows NT/XP/VISTA/2000/2003/2008 server.

- **Enhanced** - Printer output is sent to the printers accessible by the client computer when using the Georgia SoftWorks SSH2/Telnet client. The printer is considered accessible if it is configured as one of your printers visible in the Printers Applet in the Control Panel.

- **Open** - allows SSH2/Telnet user to configure the printing command used when printing.

- **Passthrough** – allows print jobs to be redirected to RF Devices supporting escape sequence based printing.

- **SAP** – Allows SAP print jobs to be redirected to RF Devices (printer). See page 243 for details.

Default Printing

The Default Printing method uses standard server printing facilities. When a SSH2/Telnet user prints, the printer output destination is exactly the same as if the user is sitting at the server and initiated the print. The destination may be local to the server or any remote printer that has been captured by the `net use` command. No setup is required for Default printing.

Enhanced Printing

Enhanced printing is an advanced feature of the Georgia SoftWorks SSH2/Telnet Clients that allows printers accessible to the user's client computer to be used when printing with SSH2/Telnet. The Client computers default printer is used if no SSH2/Telnet client command line parameters are specified. The SSH2/Telnet user can override the default printer using command line arguments when initiating the client. Also multiple printers can be utilized by configuring additional client side printers as described below.

Open Printing

The Open printing method allows the SSH2/Telnet user to specify the printing command that SSH2/Telnet will use when processing print jobs. For example if the user wants to send output to a shared[23] printer then the "print /d" command can be configured. Another example is sending output to a printer with an IP address that is on the network but is not shared or visible to the server. In this case the SSH2/Telnet user would specify the "lpr" printing command. Other valid print commands can be configured as the user's requirements dictate. Please be knowledgeable with the printing commands you select.

[23] A shared printer is one that is visible by the server

Setting up True Client Side Printing

There are up to three steps in setting up *True Client Side Printing*[24].

- Defining Virtual Printer(s) on the Server - This is the same for all printing methods.
- Adding the Georgia SoftWorks printer redirection commands to a logon script. This is specific to the printing method chosen.
- Providing command line parameters when invoking the Georgia SoftWorks SSH2/Telnet Client when using the Enhanced Printing method.(optional)

A Virtual Printer(s) is defined that redirects the output from your application. The Georgia SoftWorks SSH2/Telnet Server queries the Virtual Printer queue for new print jobs. When a print job enters the Virtual Printer queue the originating user of the job is identified. Once the user is known the associated printer is referenced and the print job is redirected to the proper printer.

Create a virtual printer on the server.

In creating a Virtual Printer the key information is the *Printer Name*, the *Share Name* and the P*ort*. Up to three (3) Virtual Printers may be defined on the server. (This will allow up to three (3) printers to be used for *each* client.). A Printer Index is used to identify and correlate the various printer setups. The printer indexes are 1, 2 and 3. For the Virtual Printer Setup the *Printer Name* and *Share Name* require printer indexes. The following setup is for a single printer (Printer Index 1).

1. Click the **Start** button at the bottom left corner of your screen.
2. Select **Settings** then **printers**.
3. Double click on Add Printer. (The add printer window opens).
4. Select **My Computer** and Click on Next
5. Select one of the unused *lpt* or *com* ports. Do NOT enable print pooling. Click Next.
6. From the Manufactures list select **Generic**
7. From the Printers select **Generic/Text Only**. Click Next
8. Name your printer **GwtnPrinter1**. NOTE: This name is required. Click Next
9. Select Shared and name the printer **GwtnPrinterShare1**. NOTE: This name is required. Click Next
10. After the printer is created, double click on the printer icon.
11. Pause the printer by selecting the menu item *Printer* and selecting *Pause Printer*. This printer must remain paused at all times. This printer cannot be used by any other service except Georgia SoftWorks.

Now your virtual printer is created and is ready for use bySSH2/Telnet . However you must be sure to set the redirection commands in logon scripts.

[24] No setup is required for Default printing.

If you need to support more than one client side printer per user at a time then repeat steps 1 through 11 using the other two Printer Indexes. This involves replacing the *printer name* in step 8 with GwtnPrinter2, GwtnPrinter3, GwtnPrinter4, GwtnPrinter5, GwtnPrinter6, GwtnPrinter7, GwtnPrinter8 or GwtnPrinter9 and the *share name* in step 9 with GwtnPrinterShare2, GwtnPrinterShare3, GwtnPrinterShare4, GwthPrinterShare5, GwtnPrinterShare6, GwthPrinterShare7, GwtnPrinterShare8, or GwthPrinterShare9.

Set virtual printer redirection commands in logon script.

For each user that is using the Georgia SoftWorks True Client Side Printing redirection commands must be added to their logon script. First the Virtual Printer must be associated with the printer device that the user wants to use. This is the device that the application will select when printing. This can be accomplished with the "net use" command. It is of the form:

```
net use lptx: \\servercomputername\GwtnPrinterSharey
```

Where

- lpt***x*** is the printer port that the application sends the printer output (typically lpt1 for Dos applications)
- \\servercomputername\GwtnPrinterShare***y*** is the specification for the virtual printer. The printer share would be either GwtnPrinterShare1, GwtnPrinterShare2, GwtnPrinterShare3 etc.

The next is an environment variable that indicates the True Client Side Printing method chosen. The environment variable is:

```
GWTN_LOCAL_PRINT_METHOD
```

and valid values are:

- `Open`
- `Enhanced`

The syntax is:

```
set GWTN_LOCAL_PRINT_METHOD=Open
```
or
```
set GWTN_LOCAL_PRINT_METHOD=Enhanced
```

If the environment variable does not exist then the True Client printing method is the **`Default`** printing method. This prints as if the user is sitting local at the server. There is no setup required for the Default printing method.

The **Open** print method allows the administrator to determine the print command used by SSH2/Telnet when printing. There are unlimited applications for this printing method. Common uses involve printing *to shared or network printers.*

The **Enhanced** print method allows any printers accessible to the client system (for example the default printer) to be easily used by SSH2/Telnet. A common use for Enhanced printing is when connecting to the server across the Internet or via RAS.

Enhanced Print Method

The Enhanced Print Method is very useful to users that connect across the Internet or via RAS. Enhanced printing may also be used in many other scenarios. The Enhanced True Client Side Printing Method is a feature of the Georgia SoftWorks SSH2/Telnet Clients and is not available with 3rd party clients. Print output is sent to the client's computer default or local printer(s). Client parameters also exist that allow printers other than the default printer to be used with Enhanced printing.

Note: It is required that each user be logged in only once for the Enhanced Print method to operate correctly. That means that each workstation/RF device must use a different User Id when connecting to the server.

The first example describes the basic Enhanced Printing setup and the second example describes using multiple client side printers and the third describes the override feature.

EXAMPLE - ENHANCED PRINTING: PRINTING TO MY LOCAL PRINTER WHEN CONNECTED ACROSS THE INTERNET OR RAS

I have sales people that SSH2/Telnet to the server to get reports from a variety of locations. They carry laptops with portable printers and SSH2/Telnet to the server either through the Internet or via RAS. They need to get customer and shipping information printed. The sales application software that they use prints to **lpt3**. How do they have printer output sent to their laptop portable printers?

This is an excellent opportunity for the Georgia SoftWorks Enhanced True Client Printing Method.

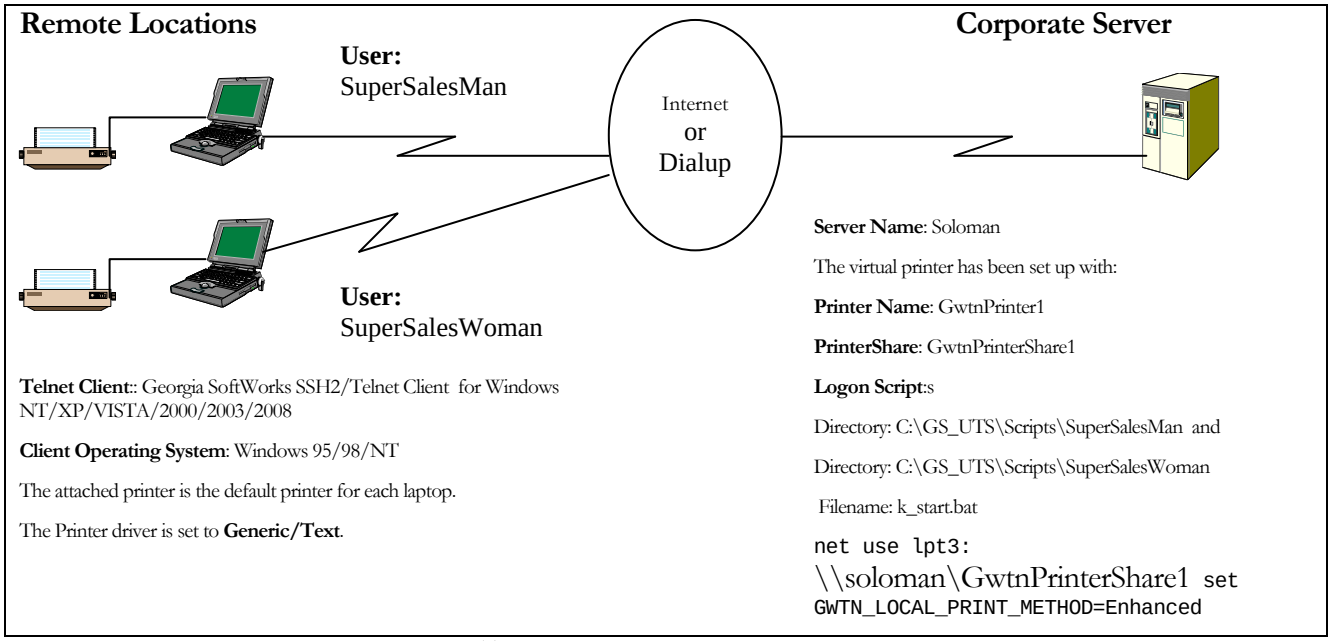


Figure 78: True Client Side Printing: Printing across the Internet or RAS

Note: The Logon Scripts can be implemented in a variety of ways depending on the requirements. For example a global logon script could be created for all telnet users. In the example above we used user specific scripts for each salesperson that might use telnet.

Important Information

User Name(s):	SuperSalesMan and SuperSalesWoman
Server Computer Name:	soloman

Telnet Client:	Georgia SoftWorks SSH2/Telnet Client
Client Operating System:	Windows 95/98, Windows NT/XP/VISTA/2000/2003/2008

The only requirement is that the Georgia SoftWorks SSH2/Telnet Client must being used. Of course the Virtual printer must be defined as described in the Virtual Printer section. The logon script for each user needs to have the following commands:

Edit the users logon script `k_start.bat` and add the following commands:

```
net use lpt3: \\soloman\GwtnPrinterShare1

set GWTN_LOCAL_PRINT_METHOD=Enhanced
```

NOTE: The above commands must appear in the logon script. It is not sufficient to set these at the command prompt or in another batch file.

The portable printer must be connected to the laptop and be the default printer for that system. It is recommended that the printer driver for the default printer be set to **Generic/Text**.

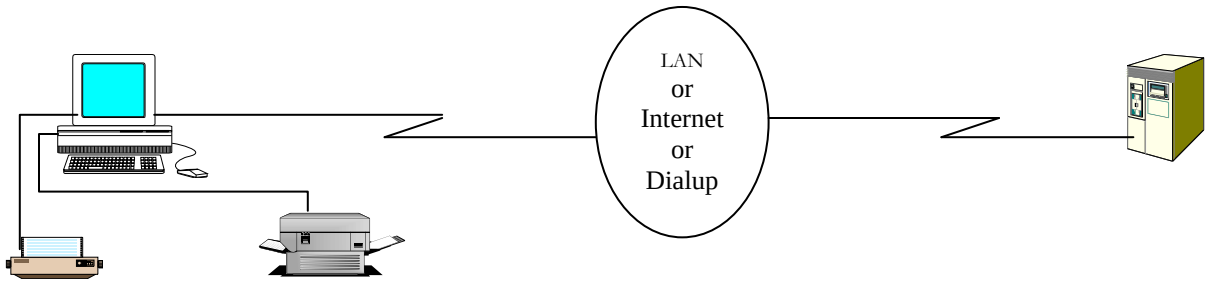
When the salesman prints to lpt3 the output will appear on the default printer connected to the salesman's client computer. This same methodology is used for either a single or multiple sales people. If the client needs to support more than one printer at a time please read the section on Multiple Client Side Printers - Carefully.

EXAMPLE - ENHANCED PRINTING: MULTIPLE CLIENT SIDE PRINTERS

Setting: remote Physicians office. They have a dot matrix printer that is used for insurance forms and a laser printer for formal letters. The medical software application exists at the main office on a Windows NT/XP/VISTA/2000/2003/2008 server and they are using SSH2/Telnet to access the application. Here an office manager in a physician's office needs to be able to access two different printers from his client machine. The Medical application is using LPT1 to print the forms and LPT2 for the formal letters.

The main office configured the server machine to have two virtual printers. One is named GwtnPrinter1 and the other is named GwtnPrinter2 (As required by the virtual printer specifications. (See page 167)).

Remote Clinic Locations **Physicians Main office**



LPT1: InsurancePrinter **LPT2: FormalPrinter**

Telnet Client: Georgia SoftWorks SSH2/Telnet Client

Client Operating System: Windows NT/XP/VISTA/2000/2003/2008

The Printer drivers for each printer are set to **Generic/Text**.

Command Line used to invoke the Georgia SoftWorks SSH2/Telnet Client:

```
gs_clnt.exe /r1=InsurancePrinter /r2=FormalPrinter /H300
```

```
Note: The name of the SSH2 client is gs_ssh.exe.
```

Server Name: **Medical**

The First virtual printer has been set up with:

Printer Name: **GwtnPrinter1**

PrinterShare: **GwtnPrinterShare1**

The Second virtual printer has been set up with:

Printer Name: **GwtnPrinter2**

PrinterShare: **GwtnPrinterShare2**

Logon Script:

Directory: C:\GS_UTS\Scripts

Filename: k_start.bat

```
net use lpt1: \\Medical\GwtnPrinterShare1
net use lpt2: \\Medical\GwtnPrinterShare2
set GWTN_LOCAL_PRINT_METHOD=Enhanced
```

Figure 79: True Client Side Printing: Using Multiple Client Side Printers per User

Note the correlation between client side command line parameters "**/r**x" and the Printer Share and Printer names on the server.

Important Information

Server Computer Name:	Medical
Telnet Client:	Georgia SoftWorks Telnet Client

Client Operating System:	Windows 95/98 or Windows NT/XP/VISTA/2000/2003/2008
Dot Matrix Printer Name:	InsurancePrinter
Laser Printer Name:	FormalPrinter
Virtual Printer to Use:	1 and 2

On the server in the users logon script add the following commands:

```
net use lpt1: \\MedServer\GwtnPrinterShare1
net use lpt2: \\MedServer\GwtnPrinterShare2
set GWTN_LOCAL_PRINT_METHOD=Enhanced
```

NOTE: The above commands must appear in the logon script. It is not sufficient to set these at the command prompt or in another batch file.

Initiate the Client session as:

```
gs_clnt.exe /r1=InsurancePrinter /r2=FormalPrinter /H300
```

Note: The name of the SSH2 client is gs_ssh.exe.

EXAMPLE - ENHANCED PRINTING: OVERRIDE

This is a variation of the previous examples. Here the salesman has access to a color printer. Our salesmen carry laptops (running Windows 95/98) with portable printers and they SSH2/Telnet to the server either through the Internet or via RAS. They need to get customer and shipping information printed. The sales program that they use prints to lpt3. A salesman is at the customer's office and wants to get a color printout of a sales report. The customer has a color printer handy. They connect the color printer and install the proper driver. It is not the default printer. How can the salesman print to the non-default color printer?

This is an excellent opportunity for the Georgia SoftWorks Enhanced True Client Printing Method with client override. A command line parameter when initiating the Georgia SoftWorks SSH2/Telnet client allows printers other than the default printer to be used.

The Parameter is:

On Windows 95/98

`/rx=printername` or

`/rx=\\computername\printersharename or`

`/rx=lpty:`

`/rx=comy:`

On Windows NT/XP/VISTA/2000/2003/2008

`/rx=\\computername\printersharename or`

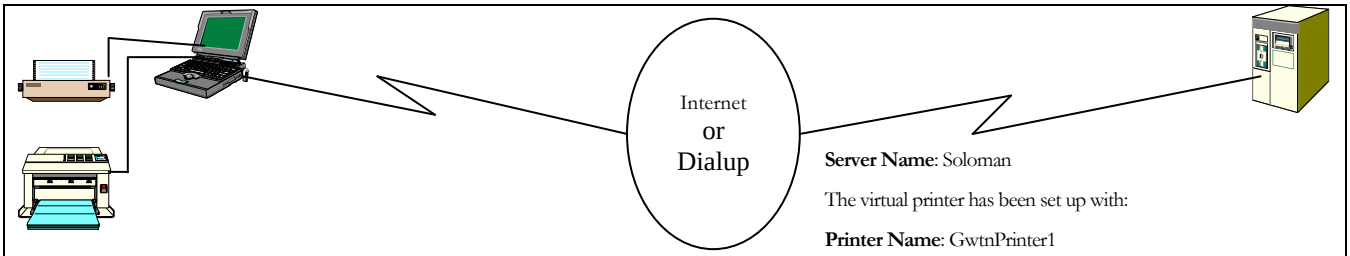
`/rx=lpty:`

`/rx=comy:`

Where *x* is (1,2,3,4,5,6,7,8,9) the Printer Index number and

Where y is (1,2,3,4) the com port or lpt port number.

Diagram continued on next page.



Com1:
CustomerColorPrin

Telnet Client:: Georgia SoftWorks Telnet Client for Windows NT/XP/VISTA/2000/2003/2008

Client Operating System: Windows 95/98

The attached printer is not the default printer for the laptop.

The Printer driver is set to **Generic/Text**.

Command Line used to invoke the Georgia SoftWorks SSH2/Telnet client:

```
gs_clnt.exe /r1=CustomerColorPrinter /H300
```

```
Note: The name of the GSW SSH2 client is
gs_ssh.exe
```

Server Name: Soloman

The virtual printer has been set up with:

Printer Name: GwtnPrinter1

PrinterShare: GwtnPrinterShare1

Logon Script:s

Directory: C:\GS_UTS\Scripts\SuperSalesMan

Filename: k_start.bat

```
net use lpt3:
\\soloman\GwtnPrinterShare1 set
GWTN_LOCAL_PRINT_METHOD=Enhanced
```

Figure 80: True Client Side Printing: Enhanced Printing Override

Important Information

User Name:	SuperSalesMan
Server Computer Name:	soloman
Telnet Client:	GSW SSH2/Telnet Client for Windows NT/XP/VISTA/2000/2003/2008
Client Operating System:	Windows 95/98
Color Printer Name:	CustomerColorPrinter
Virtual Printer to Use:	1

The only requirement is that the Georgia SoftWorks SSH2/Telnet for Windows NT/XP/VISTA/2000/2003/2008 client is being used. Of course the Virtual printer must be defined as described in the Virtual Printer section. The logon script for user SuperSalesMan needs to have the commands described below. Edit the users logon script `k_start.bat` and add the following commands:

```
net use lpt3: \\soloman\GwtnPrinterShare1

set GWTN_LOCAL_PRINT_METHOD=Enhanced
```

NOTE: The above commands must appear in the logon script. It is not sufficient to set these neither at the command prompt nor in another batch file. Initiate the Client session as:

```
gs_clnt.exe /r1=CustomerColorPrinter /H300
```

When the salesman prints to lpt3 for user SuperSalesMan the output will appear on the color printer.

Open Print Method

The Open Print Method is extremely powerful allowing the user to configure any valid printing command to be used when printing via SSH2/Telnet.

NOTE: It is required that each user be logged in only once for Open Print method to operate correctly. This means that each workstation/RF device must use a different User Id when connecting to the server.

The printing command and other parameters are configured by setting the print command environment variable. The environment variables are:

```
GWTN_LOCAL_PRINT_CMD1

GWTN_LOCAL_PRINT_CMD2

GWTN_LOCAL_PRINT_CMD3

…

GWTN_LOCAL_PRINT_CMD9
```

They correspond to the handling of print jobs sent to GwtnPrinter1, GwtnPrinter2, GwtnPrinter3 … GwtnPrinter9

And the syntax of the command is:

```
set GWTN_LOCAL_PRINT_CMDx=PrintCommand %s
```

Where

- `PrintCommand` is any valid printing command and arguments
- `%s` is the Georgia SoftWorks argument placeholder for the print job[25].
- *x* is the printer index created on the server.

The print method and capture is determined by setting the environment variable GWTN_LOCAL_PRINT_CMDx. The most commons commands are the `"print /d:"` or the `"lpr"`

[25] The %s usually will be at the end but for some print commands may have to be placed somewhere inside the command, not necessarily at the end.

printing commands. Other printing commands may be used, as the user's needs dictate. If the client printer is a shared printer (that is visible from the server) then you should use the "`print /d:`" command. The `lpr` command should be used when the host provides an *lpd* service. The user should be knowledgeable of the print command selected. The syntax of the "`print /d:`" command could be:

```
set GWTN_LOCAL_PRINT_CMDx=print /d:\\clientcomputername\sharename %s
```

Note: the %s is typed exactly as it appears. Do not replace the %s with a file name. The system replaces the %s with the current NT-generated spool file as you print to your printing port. Note: You are not printing to that temporary file from your application - the system does this behind the scenes. Enhanced and Open printing methods allow you to print to the printer port as you normally would.

Where

- `\\clientcomputername\sharename` is the network path to the destination printer.
- `%s` is the Georgia SoftWorks file placeholder

The syntax of the `lpr` print command could be:

```
set GWTN_LOCAL_PRINT_CMDx=lpr -S  Server -P printer %s
```

where

- `Server` is the name or ip address of the host providing the *lpd* service
- `Printer` is the name of the `printer queue`
- `x is the printer index`

Other arguments are available for the *lpr* command. Please see the help for the *lpd* service that you are using.

EXAMPLE - OPEN PRINTING: PRINT TO A CLIENT COMPUTER'S SHARED PRINTER

In my office I have a computer and a printer connected. I also am using a 3rd party SSH2/Telnet client. My system is on the network and my shared printer is visible to the server. I use SSH2/Telnet to connect to the company server and I run accounting applications. The accounting application uses LPT1 as the printer port. How can I use the printer in my office when I print from the accounting applications?

Important Information

User Name:	Smarts
Client Computer Name:	SmartsComputer
PrinterShareName:	SmartsPrinter
Server Computer Name:	soloman

SSH2/Telnet Client:	Any - No Restriction
Operating System:	Any - No Restriction

The only requirement is that the printer be visible to the server. In other words the printer at the client computer must be shared. Of course the Virtual printer must be defined as described in the Virtual Printer section. The logon script for user Smarts should have the following commands:

Edit the users logon script k_start.bat. and add the following commands:

```
net use lpt1: \\soloman\GwtnPrinterShare1

set GWTN_LOCAL_PRINT_METHOD=Open

set GWTN_LOCAL_PRINT_CMD1=print /d:\\SmartsComputer\SmartsPrinter %s
```

NOTE: The above commands must appear in the logon script. It is not sufficient to set these at the command prompt or in another batch file.

When the accounting application prints to lpt1 the output will appear on the printer in Ms. Smart's office. This same methodology can be used for as many users as you wish.

EXAMPLE - OPEN PRINTING: PRINT TO A NETWORK PRINTER

In our building we have a two workgroups. Each workgroup has their network printer in a common area. Both workgroups have 25 users that SSH2/Telnet to the main server from UNIX workstations and run a database application. We print reports on lpt2. How can we get the reports to be printed on the correct network printer for each workgroup? This is an excellent case for the Open True Client Side Printing method using the *lpr* command.

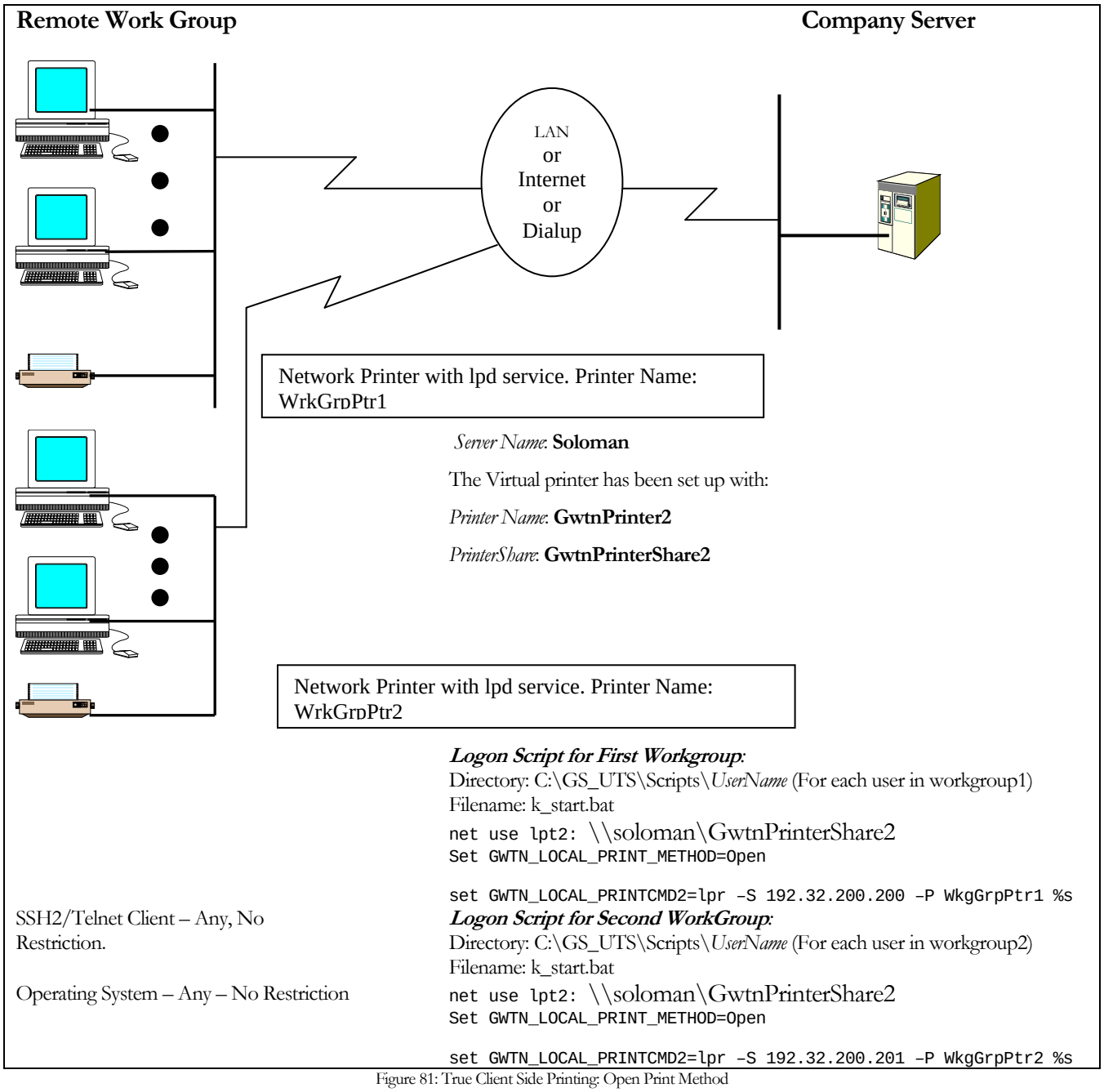

Remote Work Group
Company Server
LAN
or
Internet
or
Dialup
Network Printer with lpd service. Printer Name: WrkGrpPtr1
Server Name: Soloman
The Virtual printer has been set up with:
Printer Name: GwtnPrinter2
PrinterShare: GwtnPrinterShare2
Network Printer with lpd service. Printer Name: WrkGrpPtr2
Logon Script for First Workgroup:
Directory: C:\GS_UTS\Scripts\UserName (For each user in workgroup1)
Filename: k_start.bat
net use lpt2: \\soloman\GwtnPrinterShare2
Set GWTN_LOCAL_PRINT_METHOD=Open
set GWTN_LOCAL_PRINTCMD2=lpr -S 192.32.200.200 -P WkgGrpPtr1 %s
SSH2/Telnet Client – Any, No Restriction.
Operating System – Any – No Restriction
Logon Script for Second WorkGroup:
Directory: C:\GS_UTS\Scripts\UserName (For each user in workgroup2)
Filename: k_start.bat
net use lpt2: \\soloman\GwtnPrinterShare2
Set GWTN_LOCAL_PRINT_METHOD=Open
set GWTN_LOCAL_PRINTCMD2=lpr -S 192.32.200.201 -P WkgGrpPtr2 %s

Figure 81: True Client Side Printing: Open Print Method

Important Information

IP Address of the first Host providing the lpd service: 192.32.200.200

Printer Name: WrkGrpPtr1

IP Address of the second Host providing the *lpd* service: 192.32.200.201

Printer Name: WrkGrpPtr2

Server Computer Name: soloman

Telnet/SSH2 Client: Any - No Restriction

Operating System: Any - No Restriction

The only requirement is that an *lpd* service exists for the printer to be used. In this case the network printer provides the service. Of course the Virtual printer must be defined as described in the Virtual Printer section. The logon script k_start.bat for users in workgroup 1 need to have the following commands:

```
net use lpt2: \\soloman\GwtnPrinterShare2

Set GWTN_LOCAL_PRINT_METHOD=Open

set GWTN_LOCAL_PRINT_CMD2=lpr -S 192.32.200.200 -P WkgGrpPtr1 %s
```

The logon script k_start.bat for users in workgroup 2 need to have the following commands:

```
net use lpt2: \\soloman\GwtnPrinterShare2

Set GWTN_LOCAL_PRINT_METHOD=Open

set GWTN_LOCAL_PRINT_CMD2=lpr -S 192.32.200.201 -P WkgGrpPtr2 %s
```

NOTE: The above commands must appear in the logon script. It is not sufficient to set these at the command prompt or in another batch file.

When the database application prints to lpt2 the output will appear on the correct network printer for each workgroup. The logon script for each user in the Work Group will need to be modified to contain the same commands. This same methodology can be used for as many users as you wish.

Passthrough Print Method

Pass-through printing is available for 3rd Party Clients that support Pass-through printing. An example of a 3rd Party SSH2/Telnet client that supports Pass-through printing is AlphaCommunicator. Most 3rd party telnet clients for RF terminals also support Pass-through printing making the Georgia SoftWorks SSH2/Telnet Server for Windows NT/XP/VISTA/2000/2003/2008 the **ONLY** SSH2/Telnet server that can accommodate Pass-through printing.

Note: It is required that each user be logged in only once for the Pass-through Print method to operate correctly. This means that each workstation/RF device must use a different User Id when connecting to the server

Interested in printing to portable printers when in SAPConsole? See page 243

The required Georgia SoftWorks SSH2/Telnet Server setup for Pass-through printing is exactly the same as the Enhanced Print Method (page 166) with the following differences.

- There is no client parameter setup
- `set GWTN_LOCAL_PRINT_METHOD=PASSTHROUGH`
- Optionally set `GWTN_FF_IN_PASSTHROUGH`
- Optionally set `GWTN_PP_PRINT_BUFFER_SIZE`

Other than that the setup for Pass-through printing is identical.

Passthrough Printing - FormFeed Control

NOTE: Some third party SSH2/Telnet client[26]s exhibit printing problems when a form feed is sent at the end of the print job. The problems may manifest by simply not printing and/or the form feed being converted to NULLs. If you are experiencing this problem you can use the following environment variable for controlling the trailing form feeds at the end of a print job when using Pass-through printing.

The environment variable for the enabling or disabling the trailing form feed in Pass-through printing is:

gwtn_ff_in_passthrough

For example to ***disable*** the trailing form feed you would enter:

```
set gwtn_ff_in_passthrough=n
```

in the Logon Script for a particular user.

To enable trailing form feeds in Pass-through printing you would set the environment variable to `y` or simply not include the environment variable in the logon script as trailing form feeds are enabled by default.

NOTE: No spaces are allowed when setting environment variables.

[26] Has been observed in a SSH2/Telnet client on a version of the Palm OS.

For example:

`set gwtn_ff_in_passthrough=y` is correct

`set gwtn_ff_in_passthrough = y` is not correct

Passthrough Printing – Print Data Buffer Size

The GWTN_PP_PRINT_BUFFER_SIZE environment variable can be used to eliminate the condition where the user must hit <ENTER> multiple times for a print job to complete due to some clients prompting the user after each data block is received rather than just printing the data.

The environment variable for specifying the Print Data Buffer Size for passthrough printing is:

gwtn_pp_print_buffer_size

The default print data block (buffer) size is 500 bytes.

For example, to ***specify*** a Print Data Buffer Size of 2000 bytes you would enter:

`set gwtn_pp_print_buffer_size=2000`

in the Logon Script for a particular user.

NOTE: No spaces are allowed when setting environment variables.

For example:

`set gwtn_pp_print_buffer_size=2000` is correct

`set gwtn_pp_print_buffer_size = 2000` is not correct

Client Identity and Uniqueness

Knowing the exact identity of the client device connected is useful in many environments and required in others.

Several mechanisms can be used to obtain specific information about the client.

- Client MAC Address.
- Client IP Address
- Client Answerback Text
- Client IP Logon Scripting
- User Logon Scripting

Using one or more of the mechanisms listed above usually provides the capability to refine the client identity to the granularity needed.

Client Media Access Control (MAC) Address.

This is a hardware address that uniquely identifies each client device in a network. The only way to change the MAC address is to swap out or replace client hardware. The client MAC Address of the client is available on the server within the session through the environment variable `gwtn_client_mac` (page 252).

Client IP Address

A unique IP Address is defined for each device on a network. In many cases the System Administrator can change the IP Address with Network Management Software. Regardless, the IP address of the client is available on the server within the session through the environment variable `gwtn_client_ip` (page 252).

Client Answerback Text

The GSW Desktop and Mobile Clients (Pocket PC 2002/3, Windows CE .NET V4.2) provide the capability to pass a text string to the server. The Desktop clients use a command line parameter and the GSW mobile clients provide a configuration field on the client for defining the Answerback text (page 73). The Answerback text is available on the server within the session through the environment variable `gwtn_answerback`(page 252)

Client IP Logon Scripting

This is a powerful feature that allows different logon scripts to be launched based on the IP address of the client connecting (page 160).

User Name Logon Scripting

This is a powerful feature that allows different logon scripts to be launched based on the User Name of the client connecting (page 158).

Compatibility Pack

The Georgia SoftWorks Telnet Server allows connection with any RFC 854 compliant 3rd party client. This includes generic UNIX, MAC, Windows CE, NT, XP, VISTA, 2000, 2003, Wireless clients and more! Most telnet clients are RFC 854 compliant. Many Network Terminal and terminal servers are as well.

The Georgia SoftWorks SSH2 Server allows connection with any SSH2 compliant 3rd party client. This includes generic UNIX, MAC, Windows CE, NT, Wireless clients and more!

Compatibility Pack	Configurable	Georgia SoftWorks Clients	3rd Party Client
RFC 854 Compliant	N/A	No	Yes
Connect from 3rd Party Clients	Yes	N/A	Yes
Connect from Unix	Yes	N/A	Yes
Connect from Windows 3.1	Yes	N/A	Yes
Connect form Windows 95/98	Yes	Yes	Yes
Connect from Windows NT	Yes	Yes	Yes
Connect from Windows CE	Yes	Yes	Yes
Connect from Macs	N/A	N/A	Yes
Connect from Wireless, RF Terminals and Scanners		Depends on RF Terminal	Yes
Connect from Terminal Servers		N/A	Yes

Table 30 - Compatibility Pack

RF Terminals – Bar Code Scanners

The Georgia SoftWorks SSH2/Telnet Server for Windows NT/XP/VISTA/2000/2003/2008 works well with most RF Wireless systems, in particular hand held and vehicle mounted units. By using SSH2/Telnet the RF Wireless Hand Held application developer is able to create more generalized applications that will easily work with a variety of manufactures hardware. In addition to development and maintenance cost savings for application developers, this added flexibility allows heterogeneous systems to exist allowing customers to utilize existing hardware.

Encryption is available with Telnet when using the GSW Telnet clients. GSW provides clients for the PPC2002/2003 and many CE 4.2 class devices (see page 28).

Unmatched security with the strongest encryption is available when using the SSH2 server with ALL SSH2 clients.

Georgia SoftWorks is committed to providing the best SSH2/Telnet solution for the RF Wireless market. Some tailored features include:

- Performance. Fast Fast Fast!
- Logon Scripting to automatically launch your application upon connection. See Page 158.
- **Session Saver** – After client or link failures reconnect to a Saved session and resume work in progress exactly where you left off! (See page 102)

- **Automatic Logon** – Quickly re-establish the session by pre-configuring the Host, Domain, User Id and Password. When coupled with Session Saver you are back in operation with minimal time lost! (See page 129)

- Environment variables to eliminate most prompting. See page 117.

- Refresh the screen by entering "<ctrl> R.". Many times RF systems may drop a packet of data and the screen will need to be refreshed.

- Settable screen size to accommodate screens smaller than 25 x 80. See section on Modes on page 228.

- Extremely flexible Color to Monochrome mappings. See page 121

- Extremely flexible Color to Grayscale mapping. See page 126

- Multiple Levels of failure detection. Including configurable timers. See Page 100.

- Pass-through Printing. See page 181.

The Georgia SoftWorks SSH2/Telnet Server for Windows NT/XP/VISTA/2000/2003/2008 is industrial quality and is suitable for demanding RF Hand held Terminal applications such as in warehousing, manufacturing, grocery stores and more!

RF Devices using Power Save or Sleep Mode

If the RF devices are using a power save or sleep mode then the GSW SSH2/Telnet Server should be configured such that the sessions associated with the 'sleeping' device are not disconnected. Below are the registry changes you need to make if you have the Power Save mode enabled on your RF devices:

1. Inactivity Timeout

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\GS_Tnet\Parameters\InactivityTimeout
```

Please set to decimal `3600`.

2. Server Side Heartbeat.

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\GS_Tnet\Parameters\ClntChkTimeout
```

Please set to hexadecimal `ffffffff`.

The changes will prevent your RF devices from 'timing out' when left inactive.

TCP Receive Windows Size

This parameter provisions the maximum TCP receive windows size on a per session basis. The TCP Receive Window specifies the number of bytes a sender may transmit without receiving an acknowledgment. In general, larger receive windows will improve performance over high delay, high bandwidth networks. For greatest efficiency, the receive windows should be an even multiple of the TCP Maximum Segment Size (MSS).

Some RF Terminals may experience connectivity problems because they time out before data transmission reaches them. In this scenario you may want to reduce the value of the TCP Windows Size parameter. Reducing the value of **TCP Windows Size** causes an acknowledgment for data received to be sent to the RF Terminal sooner. A quicker acknowledgment lowers the possibility that the RF Terminal will time out while waiting for an acknowledgment. However, it also increases the amount of network traffic and causes slower throughput.

The environment variable for the TCP Window Size is:

gwtn_tcpwindowsize

For example to set the TCP Windows Size to 5000 you would enter:

```
set gwtn_tcpwindowsize=5000
```

in the Logon Script for a particular user.

NOTE: No spaces are allowed when setting environment variables.

For example:

`set gwtn_tcpwindowsize=5000` is correct

`set gwtn_tcpwindowsize =` `5000` is not correct

To use the default value (dependent on the network type) remove the environment variable from you logon script.

TCP Maximum Retransmission Count

Command: gs_tcp

Description: Command line Utility that sets the TCP Retransmission Count

This utility provisions the maximum retransmission count for TCP session data. This specifies the number of times TCP will retransmit an individual data segment (not connection request segments) before aborting the connection. The default value is 5. We suggest that the value be increased to 8 when sessions are frequently disconnected because of timeouts.

Syntax: gs_tcp [new_count|0]

Arguments: The number of retransmissions TCP will retransmit an individual data segment (not connection request segments) before aborting the connection. If no argument is provided then the current value is displayed.

Note: Administrative privileges are required to run this command.

Warnings: The system must be rebooted for the change to take effect.

Note: To restore the system default (usually set to 5), invoke the utility with the TCP Retransmission Count value equal to 0.

EXAMPLE - PROVISION TCP MAXIMUM RETRANSMISSION COUNT

Provision the TCP Retransmission Count to 8. At the command line enter:

```
Gs_tcp 8
```

Refresh Character

The Refresh Character will cause SSH2/Telnet to repaint the screen data. This is useful in environments that may occasionally drop characters such as some RF Terminals. The refresh character may be modified to suit your application. This is modified through a registry key value.

This refresh character is a registry key value. The key is:

```
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\GS_Tnet\Parameters\RefreshChar
```

The default value is `0x12` that is `<ctrl-r>.`

This is how to change the registry key for the Refresh Character.

Note: (you must be on the Windows NT/XP/VISTA/2000/2003/2008 system that the Georgia SoftWorks Windows SSH2/Telnet Server is installed. However you may connect to the Windows NT/XP/VISTA/2000/2003/2008 Registry from a remote location).

1. Click the **Start** button at the bottom left corner of your screen.
2. Click **RUN**
3. Type `REGEDT32`
4. Click **OK**
5. Select Windows item **HKEY_LOCAL_MACHINE**
6. Select the menu item **Edit**
7. Move the mouse pointer and click **Find**
8. Type **`RefreshChar`**
9. Click on **Find Next**
10. Select the menu item **Edit** and then click on **Modify**
11. Enter the new value for the RefreshChar and click **OK**

The new RefreshChar will take effect for all new connections.

Unicode – UTF-8 Encoding

The Unicode Standard is a character coding system designed to support the processing and display of the written texts of many international languages around the world. GSW offers UTF-8 encoding (**U**CS **T**ransformation **F**ormat) for improved international character set support when using the GSW SSH2/Telnet Client and 3rd Party SSH2/Telnet Clients. Of course the 3rd party SSH2/Telnet client must also support UTF-8 Encoding.

Below is an example of the character sets supported with UTF-8 Encoding when using the Kermit 95 SSH2/Telnet client with the GSW SSH2/Telnet Server.

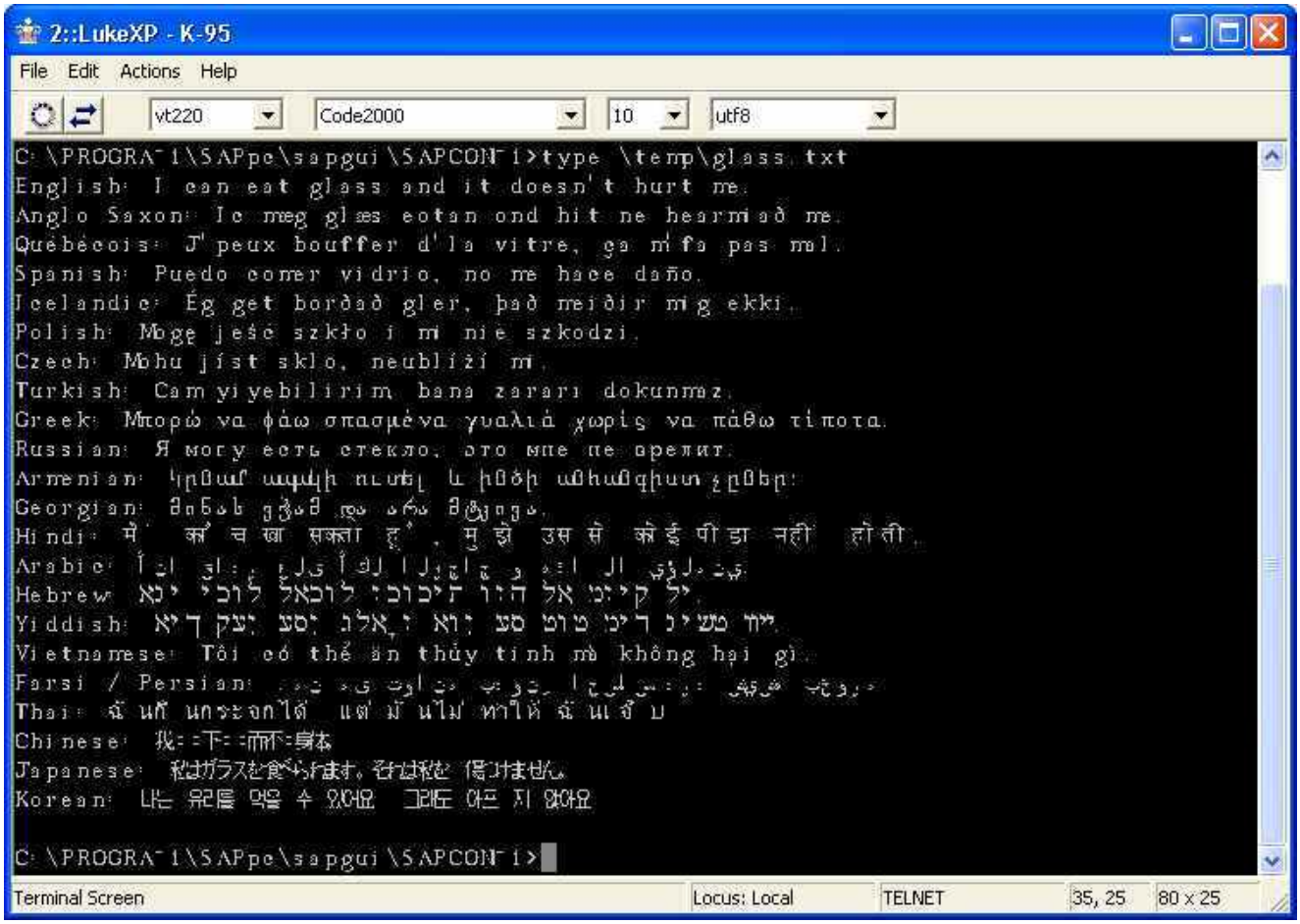

2::LukeXP - K-95
File Edit Actions Help
vt220
Code2000
10
utf8
C:\PROGRA~1\SAPpe\sapgui\SAPCON~1>type \temp\glass.txt
English: I can eat glass and it doesn't hurt me.
Anglo Saxon: Ic meg glæs eotan ond hit ne hearmiað me.
Québécois: J'peux bouffer d'la vitre, ça m'fa pas mal.
Spanish: Puedo comer vidrio, no me hace daño.
Icelandic: Ég get borðað gler, það meiðir mig ekki.
Polish: Mogę jeść szkło i mi nie szkodzi.
Czech: Mohu jíst sklo, neublíží mi.
Turkish: Cam yiyebilirim, bana zararı dokunmaz.
Greek: Μπορώ να φάω σπασμένα γυαλιά χωρίς να πάθω τίποτα.
Russian: Я могу есть стекло, оно мне не вредит.
Armenian: Կրնամ ապակի ուտել և ինծի անհանգիստ չըներ։
Georgian: მინას ვჭამ და არა მტკივა.
Hindi: मैं कांच खा सकता हूं, मुझे उस से कोई पीडा नहीं होती.
Arabic: أنا قادر على أكل الزجاج و هذا لا يؤلمني.
Hebrew: יכול לאכול זכוכית ולא מזיק לי.
Yiddish: איך קען עסן גלאז און עס טוט מיר נישט.
Vietnamese: Tôi có thể ăn thủy tinh mà không hại gì.
Farsi / Persian: من می توانم شیشه بخورم.
Thai: ฉันกินกระจกได้ แต่มันไม่ทำให้ฉันเจ็บ
Chinese: 我:下:而:身体
Japanese: 私はガラスを食べられます。それは私を傷つけません。
Korean: 나는 유리를 먹을 수 있어요. 그래도 아프지 않아요
C:\PROGRA~1\SAPpe\sapgui\SAPCON~1>
Terminal Screen
Locus: Local
TELNET
35, 25
80 x 25

Figure 82: Unicode - UTF-8 Encoding with 3rd party telnet/SSH2 client.

Unicode Character Support with the GSW SSH2/Telnet Client

It is easy to use Unicode Character Support with the GSW SSH2/Telnet Client. This feature is available on the Windows NT/XP/VISTA/2000/2003/2008 platforms. It is not available on the lower end (Windows 3.1/95/98/ME) platforms.

Follow the two steps below to enable Unicode Character Support for the GSW SSH2/Telnet Client.

1. You must use the –U command line option to enable Unicode character processing for input and output for the GSW Telnet/SSH2 Client. See page 68 for information on GSW SSH2/Telnet Client command line options.

2. Modify the properties of the Command Prompt window to select a font which supports Unicode characters, for example Lucida Console. Left Click and Select Properties.

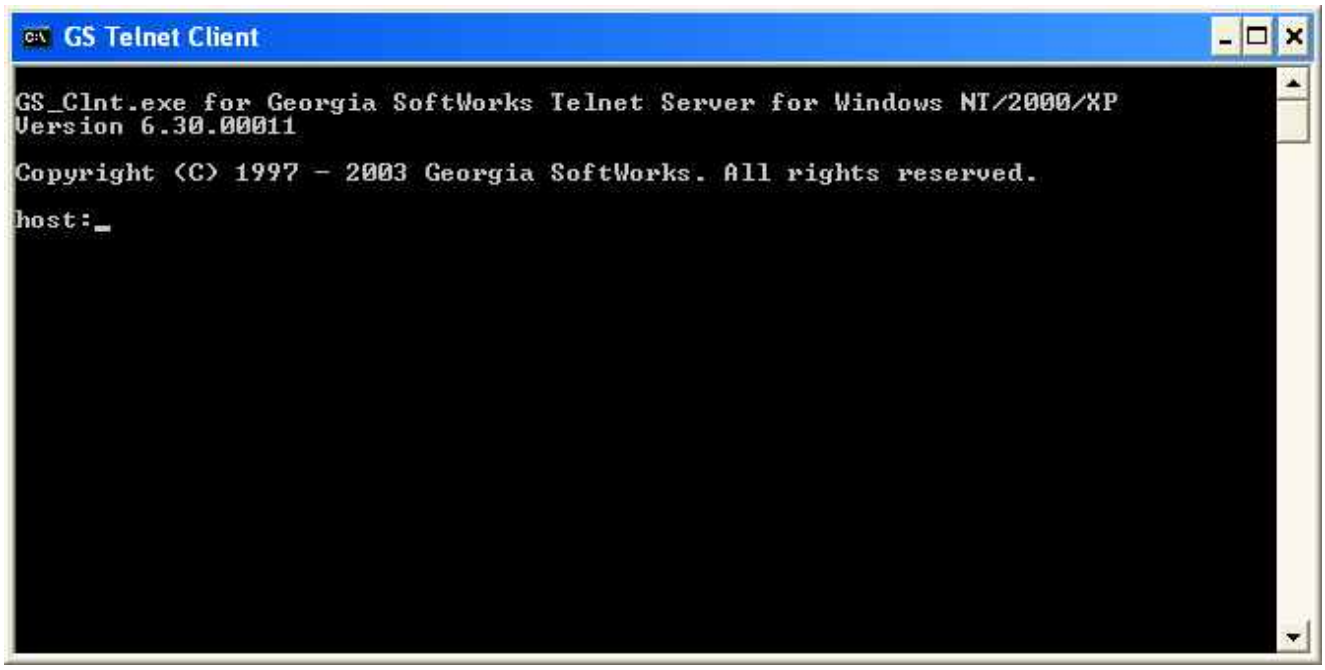

GS Telnet Client
GS_Clnt.exe for Georgia SoftWorks Telnet Server for Windows NT/2000/XP
Version 6.30.00011
Copyright (C) 1997 - 2003 Georgia SoftWorks. All rights reserved.
host:_

Figure 83: Unicode - GSW Client - Command Prompt Window - Properties

Upon selecting properties you will get a window similar to the below on the left. Select the appropriate font for your application, for example. Lucida Console and click OK. Now you can display Unicode characters.

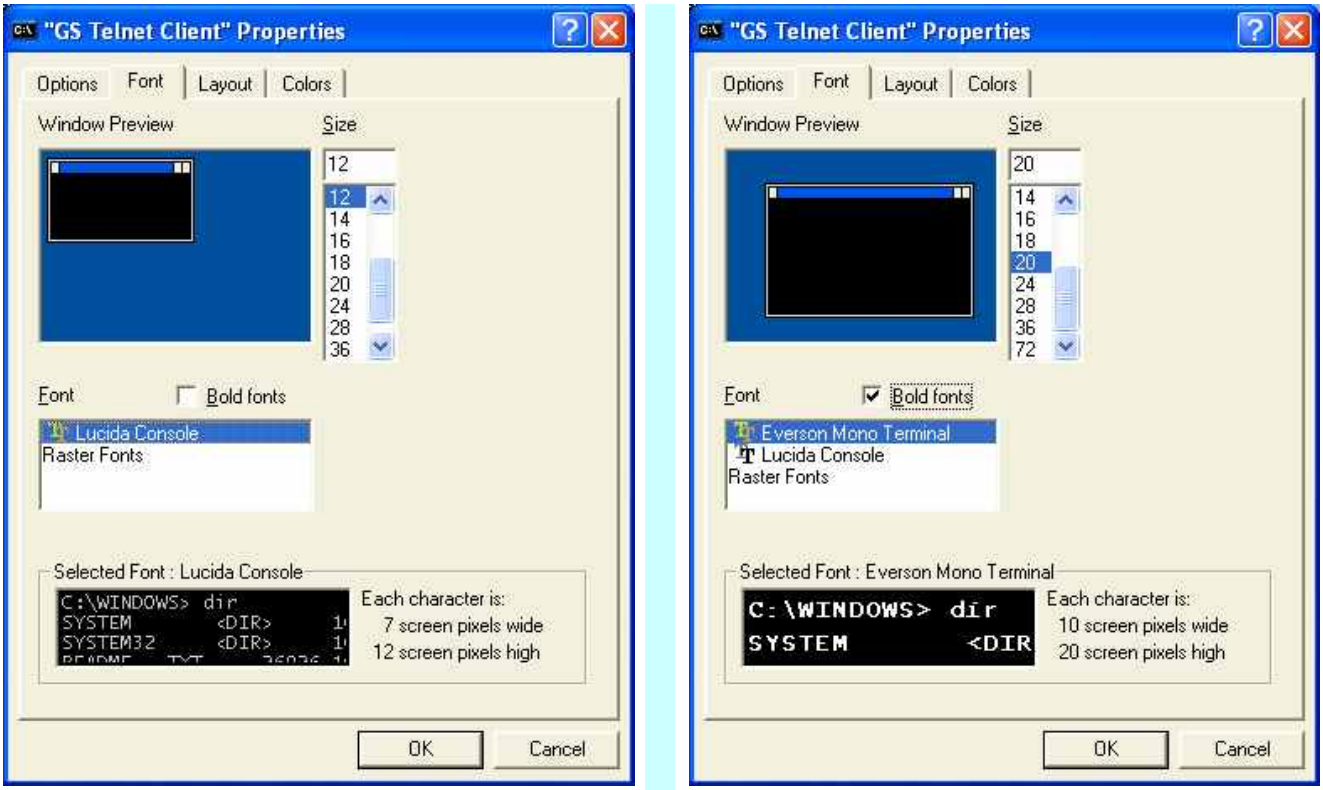


Figure 84: Unicode - GSW Client - Select Font

You may need to add fonts to your Command Prompt properties. Fonts must meet certain criteria to be available in the Command Prompt window. Details on adding fonts to the Command Session (Command Prompt) can be found by reviewing Microsoft Knowledge Base article - KB247815.

If we want to add the Everson Mono Terminal to the Command Prompt we follow the instructions as specified in the Knowledge Base. The next time we view the Command Prompt Properties we observe that the Everson Mono Terminal is now available for selection.

After selecting the Everson Mono Terminal font the following text can be displayed.

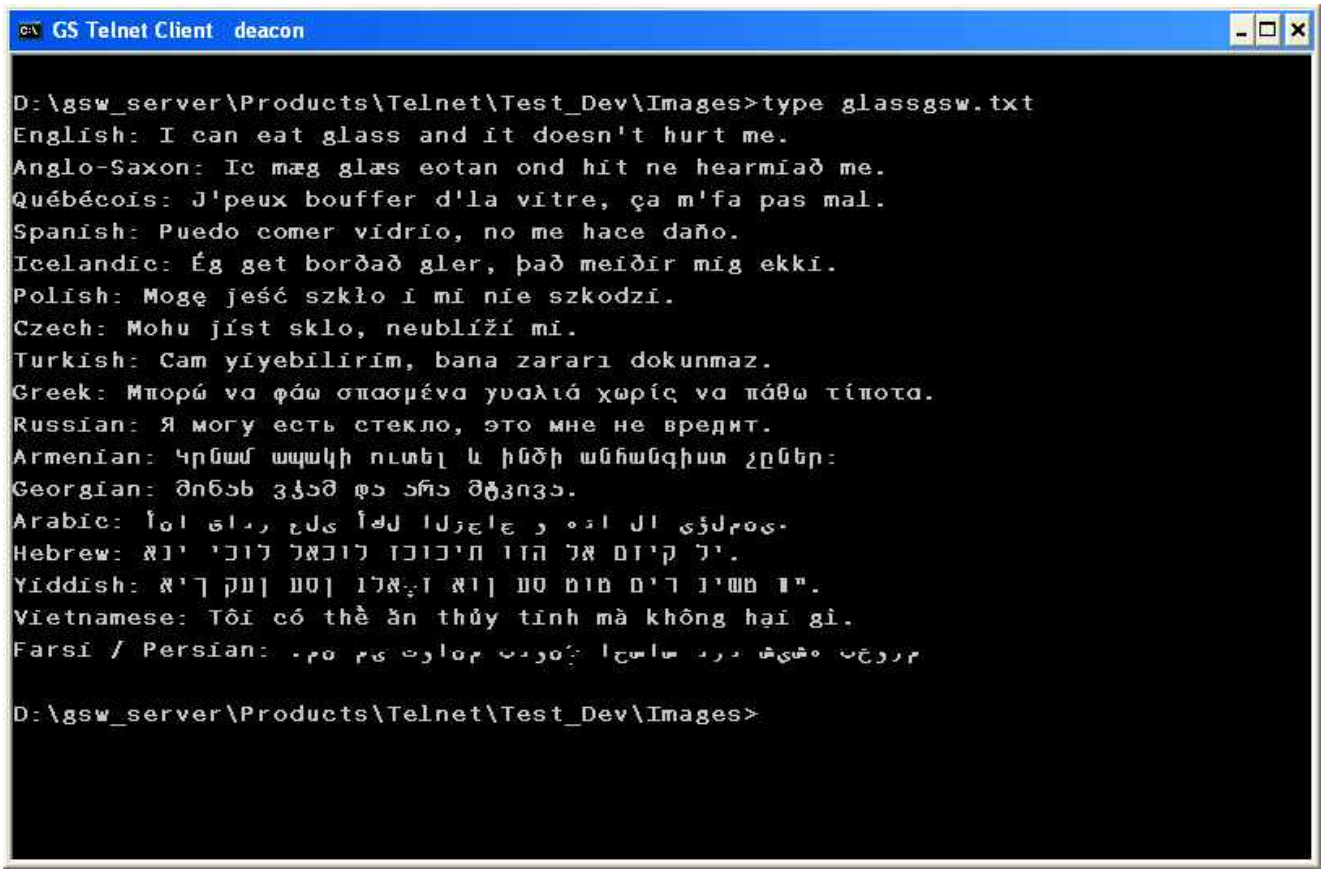

GS Telnet Client deacon
D:\gsw_server\Products\Telnet\Test_Dev\Images>type glassgsw.txt
English: I can eat glass and it doesn't hurt me.
Anglo-Saxon: Ic mæg glæs eotan ond hit ne hearmiað me.
Québécois: J'peux bouffer d'la vitre, ça m'fa pas mal.
Spanish: Puedo comer vidrio, no me hace daño.
Icelandic: Ég get borðað gler, það meiðir mig ekki.
Polish: Mogę jeść szkło i mi nie szkodzi.
Czech: Mohu jíst sklo, neublíží mi.
Turkish: Cam yiyebilirim, bana zararı dokunmaz.
Greek: Μπορώ να φάω σπασμένα γυαλιά χωρίς να πάθω τίποτα.
Russian: Я могу есть стекло, это мне не вредит.
Armenian: Կրնամ ապակի ուտել և ինծի անհանգիստ չըներ:
Georgian: მინას ვჭამ და არა მტკივა.
Arabic: أنا قادر على أكل الزجاج و هذا لا يؤلمني.
Hebrew: אני יכול לאכול זכוכית והוא לא מזיק לי.
Yiddish: איך קען עסן גלאָז און עס טוט מיר נישט ווי.
Vietnamese: Tôi có thể ăn thủy tinh mà không hại gì.
Farsi / Persian: .من می توانم بدونِ احساس درد شیشه بخورم
D:\gsw_server\Products\Telnet\Test_Dev\Images>

Figure 85: Unicode - GSW Client with Unicode Screen Shot

UTF-8 Encoding with 3rd party telnet/SSH2 clients

UTF-8 Encoding is easy to configure for 3rd party clients.
Perform the following steps to enable Unicode/UTF-8 encoding for 3rd party clients.

1. Be sure that your 3rd Party client **supports** and is **configured** for UTF-8 Encoding. Some examples of SSH2/Telnet clients that support UTF-8 encoding are Kermit 95 version 2.0 and above, Anzio or PuTTY.

2. When connected to the SSH2/Telnet Server select

   One of the following emulation modes.
   DEC VT-220/320/420
   or
   DEC VT-100
   and graphic option:

   Use UTF-8 encoded characters

Now you are set up for UTF-8 Encoding with 3rd Party Clients.

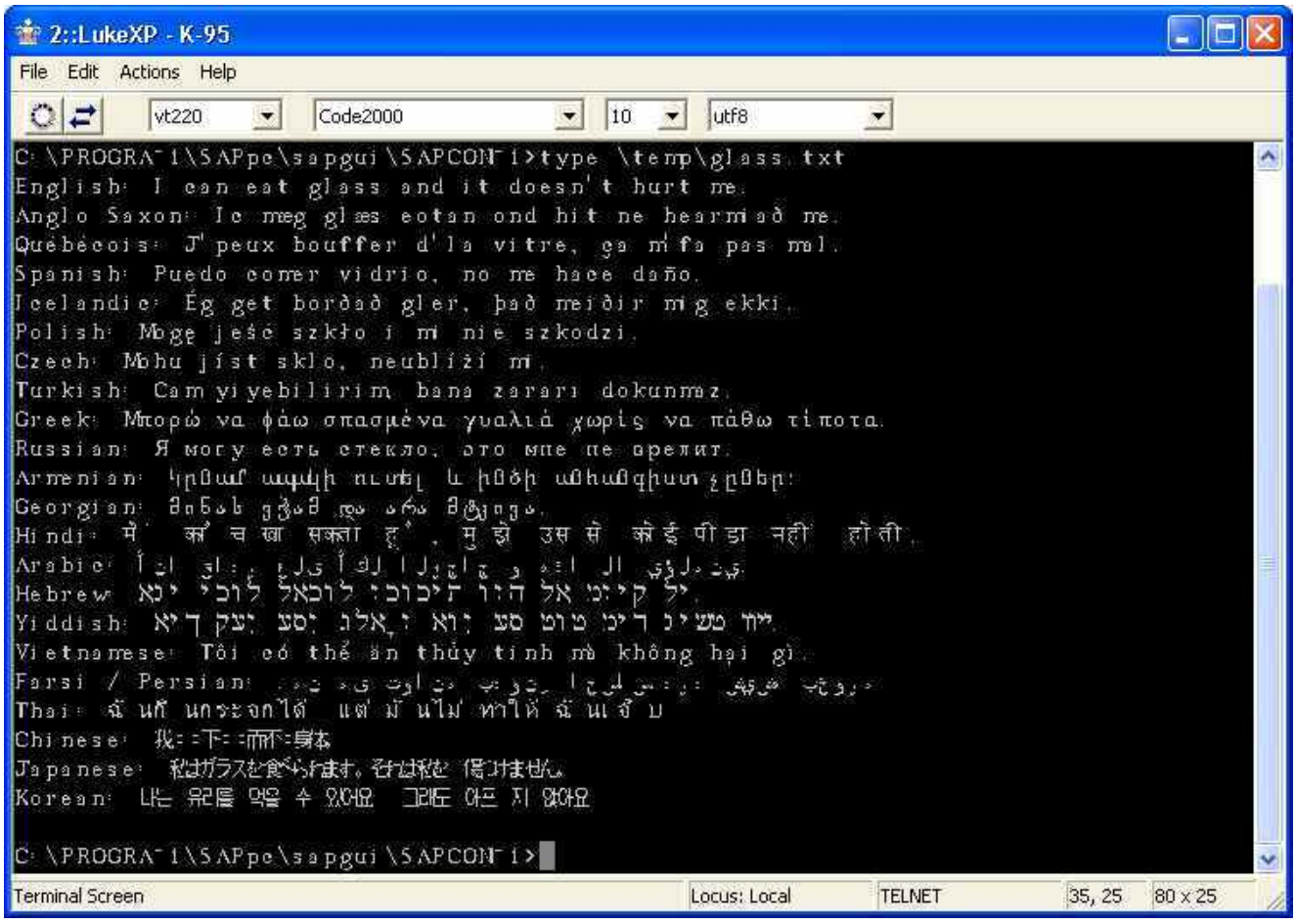

2::LukeXP - K-95
File Edit Actions Help
vt220
Code2000
10
utf8
C:\PROGRA~1\SAPpe\sapgui\SAPCON~1>type \temp\glass.txt
English: I can eat glass and it doesn't hurt me.
Anglo Saxon: Ic meg glæs eotan ond hit ne hearmiað me.
Québécois: J'peux bouffer d'la vitre, ça m'fa pas mal.
Spanish: Puedo comer vidrio, no me hace daño.
Icelandic: Ég get borðað gler, það meiðir mig ekki.
Polish: Mogę jeść szkło i mi nie szkodzi.
Czech: Mohu jíst sklo, neubližší mi.
Turkish: Cam yiyebilirim bana zararı dokunmaz.
Greek: Μπορώ να φάω σπασμένα γυαλιά χωρίς να πάθω τίποτα.
Russian: Я могу есть стекло, оно мне не вредит.
Armenian: կրնամ ապակի ուտել և ինծի անհանգիստ չըներ։
Georgian: მინას ვჭამ და არა მტკივა.
Hindi: मैं कांच खा सकता हूं, मुझे उस से कोई पीडा नहीं होती.
Arabic: أنا قادر على أكل الزجاج و هذا لا يؤلمني.
Hebrew: יכול לאכול זכוכית ולא מזיק לי.
Yiddish: איך קען עסן גלאָז און עס טוט מיר נישט.
Vietnamese: Tôi có thể ăn thủy tinh mà không hại gì.
Farsi / Persian: من می توانم بدونم شکستن آن را بخورم.
Thai: ฉันกินกระจกได้ แต่มันไม่ทำให้ฉันเจ็บ
Chinese: 我:下:而下:身体
Japanese: 私はガラスを食べられます。それは私を傷つけません。
Korean: 나는 유리를 먹을 수 있어요. 그래도 아프지 않아요
C:\PROGRA~1\SAPpe\sapgui\SAPCON~1>
Terminal Screen
Locus: Local
TELNET
35, 25
80 x 25

Figure 86: 3rd Party Client - UTF-8 Encoding Display

Utility Pack

Utility Pack	Configurable	Georgia SoftWorks Client	3rd Party Client
Change Password	Yes	Yes	Yes
Connection Banner	Yes	Yes	Yes
Execute Command on Client	Yes	Yes	No
File Transfer	Yes	Yes	No
Launch GUI Application	Yes	Yes	Yes
Remote Reboot of Server	Yes	Yes	Yes
Remote Shutdown of Server	Yes	Yes	Yes
Remote Registration	Yes	Yes	Yes
Special Bell Processing	Yes	Yes	Yes
TTY Name	Yes	Yes	Yes

Table 31 - Utility Pack

The Georgia SoftWorks SSH2/Telnet server provides utilities for the users' convenience. The utilities reside in the installation directory. The utility names are not case sensitive. Arguments such as Windows NT/XP/VISTA/2000/2003/2008 passwords are case sensitive.

Change Password command line utility

Many times a user wishes to change their password. A convenient method is to use the Georgia SoftWorks Change Password command line utility.

Command: GS_ChPwd

Description: Command line utility that changes a user's password

Syntax: Gs_ChPwd <user> <\\computer | domain> <newpassword> <oldpassword>

Arguments: There are 4 required arguments.

a. <user id> The user id for which to change the password

b. <computer name or domain> - The computer name or domain

c. <new password> - the new password

d. <old password> - the old password.

EXAMPLE - UTILITIES: CHANGE PASSWORD

The user "smith" wants to change his password on the computer "soloman" from "fast" to "superfast".

```
Gs_ChPwd  smith \\soloman superfast  fast
```

Connection Banner

A custom banner can be displayed to the client upon connection to the host. The connection banner is useful for displaying security and legal notices and other information that the user should see BEFORE logging on to the host.

To enable a connection banner perform the following steps.

1. Create the text of the banner in an ASCII text file.
2. Save the file and name it `banner.txt`
3. Place the file in the directory <telnet_server_root_path>[27]

When a user connects, the SSH2/Telnet server looks for the existence of the file banner.txt in the SSH2/Telnet root directory and displays the text before the LOGIN prompt is issued.

Please make sure that the complete text can be displayed on a single console screen to ensure easy readability.

[27] This is the installation directory for the telnet server.

Execute Application on Client from within a SSH2/Telnet Session

Bridge the Gap between GUI processing and a character oriented protocol.

An incredibly powerful utility that facilitates client side processing of server side files when using the Georgia SoftWorks SSH2/Telnet Client. The Georgia SoftWorks SSH2/Telnet Server provides the capability to **execute commands on the client computer while in the SSH2/Telnet session**. This is accomplished through a utility:

```
gs_exec client_side_command_line
```

This capability is fully developed when coupled with the Georgia SoftWorks File Transfer Utilities (gs_put and gs_get) .

Execution of commands on the client can be used to accomplish:

1. Edit server files[28] using a local GUI editor like MS Word.
2. Run programs on the client that prompts the user for data and transfers the results back to the server.
3. Automate file transfer from the server to the client, run program that uses transferred file for input and then transfer the output data of the program back to the server.
4. Useful in situations where you want to do part of the processing on the server and part on the client.
5. Initiate program on client and transfer results to server when complete.
6. Periodic initiation of client side program processing transferred data and/or transferring data when complete.
7. View graphic images on the client using a program such as Corel Draw or Microsoft Photo Editor when the image resides on the server.
8. Run file or system level commands on the client synchronously with the server side script.
9. AND MUCH MUCH MORE!

Command: `gs_exec`

Description: Command line utility that executes commands on the client from within a SSH2/Telnet session.

Syntax: `gs_exec <client_side_command_line>`

Arguments: There is 1 required argument.

[28] Or any file accessible from the server!

a. `<client_side_command_line>` The command to execute on the client computer.

This command is any valid command on the client computer. It can contain command arguments just as if entered on the client.

NOTE: Path information as argument data must be from the Clients perspective.

If the program selected to run is a GUI program then a new Window is opened. If the program selected is not a GUI program and has character output then the output data it is displayed in the SSH2/Telnet Window for 2000 ms (two Seconds) or the time specified by the `/scmddelay` *gs_clnt.exe* command line option (Page 66).

Typically a script or batch file is created that will transfer the server file to the client; run the client side command using the gs_exec command, and then transfer the file back to the server when completed.

EXAMPLE - UTILITIES: EXECUTE PROGRAM ON CLIENT – LOCAL EDIT USING GUI EDITOR

A company brochure that resides in a file that contains graphic images and rich test exists on Server that the user would like to edit using the client copy of Microsoft Word.

The file can be transferred using the gs_put utility, then MS Word is invoked using the gs_exec utility, and when the editing is complete, the file is transferred back to the server using the gs_get utility. The following commands reflect the sequence of commands that detail the steps.

```
gs_put d:\xfer\cbroch.doc c:\received\cbroch.doc
gs_exec winword c:\received\cbroch.doc
gs_get c:\received\cbroch.doc d:\xfer\cbroch.doc
```

These commands can be included in a batch file such that the "Local Edit" capability is more "generic" and easily invoked.

Create a batch file (lets call it ledit.bat)

```
gs_put d:\xfer\%1 c:\received\%1
gs_exec winword c:\received\%1
gs_get c:\received\%1 d:\xfer\%1
```

Assumptions:
File on server is always in `d:\xfer\` folder
File to be edited on client is always in `c:\received` folder.

When connected via SSH2/Telnet to the server; when in the d:\xfer folder the user can simply type:

```
ledit cbroch.doc
```

to transfer the file to the client and run MS Word. When completed in MS Word the file is automatically transferred back o the server.

A car dealership headquarters has images of motor vehicles in the database. A local dealer can easily display the images (pictures) to prospective buyers via SSH2/Telnet .

The file can be transferred using the gs_put utility, then the default image view can be invoked allowing the image to be viewed without required knowledge of the graphics display program. On the Windows OS the file type[29] extension will invoke a default executable. In the following two lines, the first line transfers the file to the client and the second line will invoke the default image display program, which will display the image.

```
gs_put d:\auto_database\corvette_1993.jpeg c:\viewcar\corvette_1993.jpeg
gs_exec c:\viewcar\corvette_1993.jpeg
```

Again these commands can be included in a batch file such that the "View Image" capability is more "generic" and easily invoked.

Create a batch file (lets call it vimage.bat)

```
gs_put d:\auto_database\%1 c:\viewcar\%1
gs_exec c:\viewcar\%1
```

Assumptions:
Image files on server is always in `d:\auto_database\` folder
Image file to be viewed on client is always in `c:\viewcar` folder.
A default image viewer exists for .jpeg extensions

When connected via SSH2/Telnet to the server and positioned in the d:\auto_database folder the user can simply type:

```
vimage corvette_1993.jpeg
```

to transfer the file to the client and display the image.

[29] In this example, our file type has a .jpeg extension

The User needs to transfer a file from the client to the server but does not remember the exact filename. To quickly obtain a directory listing they can simply run:

```
gs_exec dir
```

This will display the directory contents without having to open a new window on the client. The contents of the directory (folder) are quickly displayed in the SSH2/Telnet Window for 2000 ms (two seconds) or the time specified by the `/scmddelay` *gs_clnt.exe* command line option

File Transfer command line Utility

SSH2/Telnet file transfer capabilities are available with Windows NT/XP/VISTA/2000/2003/2008 when using the Georgia SoftWorks SSH2/Telnet Server and GSW Clients. The

File transfer via SSH2/Telnet is convenient as there is no need for an FTP server to be installed and you are not limited by file sizes as with many email attachments.

Secure file transfer with **Telnet** is possible with the GSW Telnet Server and GSW clients. When encryption is enabled file transfers are ALSO encrypted!

Secure file transfer with **SSH2** using very strong encryption is always enabled when using GSW SSH2 clients.

GS_PUT - Transfer from Server to Client

Efficient file transfers from the Server to the Client computer can be easily accomplished when using the Georgia SoftWorks SSH2/Telnet Client.

A new utility called GS_PUT is included in the SSH2/Telnet server installation directory.

Command: gs_put

Description: Command line utility that transfers a file from the Server to the Client Computer.

Syntax: gs_put <source_file_path> <destination_file_path>

Arguments: There are 2 required arguments.

a. <source_file_path> The file path to the file on the server

(Uses Server computer drive letters and directories)

b. <destination_file_path> The file path for the destination on the client.

(Uses Client computer drive letters and directories)

EXAMPLE - UTILITIES: FILE TRANSFER SERVER TO CLIENT

```
gs_put d:\corba\hints\dealers.doc c:\books\dealers.doc
```

This will transfer the file `d:\corba\hints\dealers` from the server to the client computer and save it as `c:\books\dealers.doc`.

NOTE: You must use the Georgia SoftWorks SSH2/Telnet client to use the GS_PUT file transfer utility.

The gs_put errorlevels are described later in this section (page 202).

GS_GET - Transfer from Client to Server

Efficient file transfers from the Client to the Server computer can be easily accomplished when using the Georgia SoftWorks SSH2/Telnet Client.

A new utility called GS_GET is included in the SSH2/Telnet server installation directory.

Command: gs_get

Description: Command line utility that transfers a file from the Client to the Server Computer.

Syntax: gs_get <source_file_path> <destination_file_path>

Arguments: There are 2 required arguments.

a. <source_file_path> The file path to the file on the client

(Uses Client computer drive letters and directories)

b. <destination_file_path> The file path for the destination on the server

(Uses Server computer drive letters and directories)

EXAMPLE - UTILITIES: FILE TRANSFER CLIENT TO SERVER

```
gs_get c\books\dealers.doc d:\corba\hints\dealers.doc
```

This will transfer the file `c:\books\dealers.doc` from the client computer and save it as `d:\corba\hints\delears.doc` on the server.

NOTE: You must use the Georgia SoftWorks SSH2/Telnet Client to use the GS_GET file transfer utility.

The gs_get errorlevels are described later in this section (page 202).

GS_PUT Error Values

gs_put.exe uses the shell errorlevel variable to report transfer results to the shell. The shell errorlevel variable reports transfer results to the shell. . The errorlevel variable is usually used in batch files in automated processing environments.

Error Level	ERROR VALUE	DESCRIPTION
0	ERROR_SUCCESS	Transfer Successful
1	ERROR_SHARED_MEMORY	Transfer aborted: Internal shared memory could not be accessed
2	ERROR_USAGE	Transfer aborted: Command line invalid.
3	ERROR_SOURCE_FILE	Transfer aborted: Source file could not be accessed.
4	ERROR_INFO_SLOT_ENV	Transfer aborted: Internal environment variable was not found.
5	ERROR_INVALID_INFO_SLOT	Transfer aborted: Internal environment variable had invalid value.
6	ERROR_SYNC_OBJECTS	Internal – report to GSW
7	ERROR_GET_MUTEX	Internal – report to GSW
8	ERROR_ABANDONED	Internal – report to GSW
9	ERROR_SET_EVENT	Internal – report to GSW
10	ERROR_OS1	Internal – report to GSW
11	ERROR_OS2	Internal – report to GSW
12	ERROR_WAIT	Internal – report to GSW
13	ERROR_UNEXPECETED_NOTIFICATION	Transfer aborted: Unexpected notification from the agent
14	ERROR_SET_CONTROL_HANDLER	Transfer aborted: The CTRL-C handler could not be set.
15	UNDEFINED	
16	ERROR_INVALID_CLNT	Transfer aborted: Client software is not the GSW Client.
17	ERROR_GET_GSCLNT	Transfer aborted: Client type could not be determined.
18	ERROR_DISK_FULL	Transfer aborted: Disk is full on client.
19	ERROR_STDIO	Transfer aborted: Call to the standard C Library failed
20	ERROR_WIN32	Transfer aborted: WIN32 Subsystem Error
21	ERROR_SYNC	Transfer aborted: Session encountered unrecoverable synchronization errors. User needs to establish a new session before a file transfer can be used again.
22	UNDEFINED	
23	ERROR_TCP_SEND	Transfer aborted: Connection broken during transfer.
24	ERROR_ABORTED_BY_USER	Transfer aborted: User pressed CTRL-C or CTRL-Break
25	ERROR_SESSION_SUSPENDED	Transfer aborted: Session became suspended.

Table 32 - GS_PUT Error Levels

The usage of the *errorlevel* variable in an automated file transfer batch file might have the form:

Example - Utilities: GS_PUT Errorlevel Usage in batch file

```
@:begin
c:\GS_UTS\gs_put d:\corba\hints\dealers.doc c:\books\dealers.doc
@if errorlevel 25 goto ERROR_SESSION_SUSPENDED
@if errorlevel 24 goto ERROR_ABORTED_BY_USER
@if errorlevel 23 goto ERROR_TCP_SEND
@if errorlevel 21 goto ERROR_SYNC
@if errorlevel 20 goto ERROR_WIN32
@if errorlevel 19 goto ERROR_STDIO
@if errorlevel 18 goto ERROR_DISK_FULL
...
@if errorlevel  3 goto ERROR_SOURCE_FILE
@if errorlevel  2 goto ERROR_USAGE
@if errorlevel  1 goto ERROR_SHARED_MEMORY
@if errorlevel  0 goto ERROR_SUCCESS

@:ERROR_SESSION_SUSPENDED
```

```
@echo ERROR_SESSION_SUSPENDED
@goto exit
@:ERROR_ABORTED_BY_USER
@echo ERROR_ABORTED_BY_USER
@goto exit

@:ERROR_TCP_SEND
@echo ERROR_TCP_SEND
@goto exit

@:ERROR_SYNC
@echo ERROR_SYNC
@goto exit

@:ERROR_WIN32
@echo ERROR_WIN32
@goto exit

@:ERROR_STDIO
@echo ERROR_STDIO
@goto exit

@:ERROR_DISK_FULL
@echo ERROR_DISK_FULL
@goto exit
...
@:ERROR_SOURCE_FILE
@echo ERROR_SOURCE_FILE
@goto exit

@:ERROR_USAGE
@echo ERROR_USAGE
@goto exit

@:ERROR_SHARED_MEMORY
@echo ERROR_SHARED_MEMORY
@goto exit

@:ERROR_SUCCESS
@echo FILE TRANSFER SUCCESSFUL


@:exit
```

NOTE: An expanded example template of the above example is located in the SSH2/Telnet Server installation folder.

GS_GET Error Values

gs_get.exe uses the shell errorlevel variable to report transfer results to the shell. The shell errorlevel variable reports transfer results to the shell. . The errorlevel variable is usually used in batch files in automated processing environments.

Error Level	ERROR VALUE	DESCRIPTION
0	ERROR_SUCCESS	Transfer Successful
1	ERROR_SHARED_MEMORY	Transfer aborted: Internal shared memory could not be accessed
2	ERROR_USAGE	Transfer aborted: Command line invalid.
3	ERROR_TARGET_FILE	Transfer aborted: Target file could not be accessed.
4	ERROR_INFO_SLOT_ENV	Transfer aborted: Internal environment variable was not found.
5	ERROR_INVALID_INFO_SLOT	Transfer aborted: Internal environment variable had invalid value.
6	ERROR_SYNC_OBJECTS	Internal – report to GSW
7	ERROR_GET_MUTEX	Internal – report to GSW
8	ERROR_ABANDONED	Internal – report to GSW
9	ERROR_SET_EVENT	Internal – report to GSW
10	ERROR_OS1	Internal – report to GSW
11	ERROR_OS2	Internal – report to GSW
12	ERROR_WAIT	Internal – report to GSW
13	ERROR_UNEXPECETED_NOTIFICATION	Transfer aborted: Unexpected notification from the agent
14	ERROR_SET_CONTROL_HANDLER	Transfer aborted: The CTRL-C handler could not be set.
15	ERROR_INVALID_CLNT	Transfer aborted: The transfer software is not the GSW client.
16	ERROR_GET_GSCLNT	Transfer aborted: Client software type cannot be determined.
17	UNDEFINED	
18	ERROR_DISK_FULL	Transfer aborted: Disk is full on client.
19	ERROR_STDIO	Transfer aborted: Call to the standard C Library failed
20	ERROR_WIN32	Transfer aborted: WIN32 Subsystem Error
21	ERROR_SYNC	Transfer aborted: Session encountered unrecoverable synchronization errors. User needs to establish a new session before a file transfer can be used again.
22	UNDEFINED	
23	ERROR_TCP_SEND	Transfer aborted: Connection broken during transfer.
24	ERROR_ABORTED_BY_USER	Transfer aborted: User pressed CTRL-C or CTRL-Break
25	ERROR_SESSION_SUSPENDED	Transfer aborted: Session became suspended.

Table 33 - GS_GET Error Levels

The usage of the *errorlevel* variable in an automated file transfer batch file might have the form:

An example for GS_GET

EXAMPLE - UTILITIES: GS_GET ERRORLEVEL USAGE IN BATCH FILE

```
@:begin
c:\GS_UTS\gs_get %1 %2
@if errorlevel 25 goto ERROR_SESSION_SUSPENDED
@if errorlevel 24 goto ERROR_ABORTED_BY_USER
@if errorlevel 23 goto ERROR_TCP_SEND
@if errorlevel 21 goto ERROR_SYNC
@if errorlevel 20 goto ERROR_WIN32
@if errorlevel 19 goto ERROR_STDIO
@if errorlevel 18 goto ERROR_DISK_FULL
@if errorlevel 16 goto ERROR_GET_GSCLNT
@if errorlevel 15 goto ERROR_INVALID_CLNT

@if errorlevel 14 goto ERROR_SET_CONTROL_HANDLER
@if errorlevel 13 goto ERROR_UNEXPECTED_NOTIFICATION
```

```
@if errorlevel 12 goto ERROR_WAIT
@if errorlevel 11 goto ERROR_OS2
@if errorlevel 10 goto ERROR_OS1
@if errorlevel  9 goto ERROR_SET_EVENT
@if errorlevel  8 goto ERROR_ABANDONED
@if errorlevel  7 goto ERROR_GET_MUTEX
@if errorlevel  6 goto ERROR_SYNC_OBJECTS
@if errorlevel  5 goto ERROR_INVALID_INFO_SLOT
@if errorlevel  4 goto ERROR_INFO_SLOT_ENV
@if errorlevel  3 goto ERROR_TARGET_FILE
@if errorlevel  2 goto ERROR_USAGE
@if errorlevel  1 goto ERROR_SHARED_MEMORY


@if errorlevel 0 goto ERROR_SUCCESS

@:ERROR_SESSION_SUSPENDED
@echo ERROR_SESSION_SUSPENDED
@goto exit

@:ERROR_ABORTED_BY_USER
@echo ERROR_ABORTED_BY_USER
@goto exit

@:ERROR_TCP_SEND
@echo ERROR_TCP_SEND
@goto exit

@:ERROR_SYNC
@echo ERROR_SYNC
@goto exit

@:ERROR_WIN32
@echo ERROR_WIN32
@goto exit

@:ERROR_STDIO
@echo ERROR_STDIO
@goto exit

@:ERROR_DISK_FULL
@echo ERROR_DISK_FULL
@goto exit

@:ERROR_GET_GSCLNT
@echo ERROR_GET_GSCLNT
@goto exit

@:ERROR_INVALID_CLNT
@echo ERROR_INVALID_CLNT
@goto exit


@:ERROR_SET_CONTROL_HANDLER
@echo ERROR_SET_CONTROL_HANDLER
@goto exit

@:ERROR_UNEXPECTED_NOTIFICATION
```

```
@echo ERROR_UNEXPECTED_NOTIFICATION
@goto exit

@:ERROR_WAIT
@echo ERROR_WAIT
@goto exit

@:ERROR_OS2
@echo ERROR_OS2
@goto exit

@:ERROR_OS1
@echo ERROR_OS1
@goto exit

@:ERROR_SET_EVENT
@echo ERROR_SET_EVENT
@goto exit

@:ERROR_ABANDONED
@echo ERROR_ABANDONED
@goto exit

@:ERROR_GET_MUTEX
@echo ERROR_GET_MUTEX
@goto exit

@:ERROR_SYNC_OBJECTS
@echo ERROR_SYNC_OBJECTS
@goto exit

@:ERROR_INVALID_INFO_SLOT
@echo ERROR_INVALID_INFO_SLOT
@goto exit

@:ERROR_INFO_SLOT_ENV
@echo ERROR_INFO_SLOT_ENV
@goto exit

@:ERROR_TARGET_FILE
@echo ERROR_TARGET_FILE
@goto exit

@:ERROR_USAGE
@echo ERROR_USAGE
@goto exit

@:ERROR_SHARED_MEMORY
@echo ERROR_SHARED_MEMORY
@goto exit

@:ERROR_SUCCESS
@echo ERROR_SUCCESS
@goto begin

@:exit
@goto begin
```

Launch GUI Application on Server

Launch GUI applications on the server's desktop from a SSH2/Telnet session using the new utilities `gs_gui.exe` and `gs_engui.exe`.

Note: Launched GUI applications do NOT display on the SSH2/Telnet session.

To launch a GUI application on the server

1. Run gs_engui.exe on the desktop. Use the RUN command on the start button or open a command shell. This cannot be done via SSH2/Telnet ; it must be Run on the server by the current interactive user.

2. To launch a GUI application on the server via SSH2/Telnet - prefix the applications command line with `gs_gui.exe`.

   EXAMPLE - LAUNCH NOTEPAD ON THE SERVER VIA SSH2/TELNET.

   At the command prompt enter:

   ```
   gs_gui notepad.exe
   ```

   Notepad will display on the server desktop.

Reboot Windows Server computer command line utility.

The System Administrator may need to reboot a Windows NT/XP/VISTA/2000/2003/2008 system remotely. The Georgia SoftWorks SSH2/Telnet Server provides a command line utility that reboots a Windows NT/XP/VISTA/2000/2003/2008 computer.

Command: GS_Rbt

Description:

Reboot a Windows NT/XP/VISTA/2000/2003/2008 computer. The computer will reboot about 40 seconds after the command is executed. GUI users will receive a notification.

Syntax: Gs_Rbt [Computer]

Arguments: There is 1 optional argument

> [computer name] - the name of the computer to reboot... If the computer name is omitted then the Windows NT/XP/VISTA/2000/2003/2008 computer that the command is executed will reboot.

Notes: Administrative privileges are required to run this command.

Warnings: The system administrator must be sure that they want to reboot, as all user sessions will be disconnected.

EXAMPLE - UTILITIES: REBOOT WINDOWS NT/XP/VISTA/2000/2003/2008

Reboot the computer soloman

```
Gs_Rbt soloman
```

You will then be prompted with:

```
You have requested to shutdown soloman.

If you continue all applications with unsaved data will be forcibly
closed in 40 seconds.

Do you really want to continue? [Yes/No]
```

You must type either `Yes` or No and press `<enter>`. "Y" or "N" is not valid.

In approximately 40 seconds the Windows NT/XP/VISTA/2000/2003/2008 computer will reboot.

Shutdown command line utility for Windows NT/XP/VISTA/2000/2003/2008

The System Administrator may need to shutdown a Windows NT/XP/VISTA/2000/2003/2008 system remotely. The Georgia SoftWorks SSH2/Telnet Server provides a command line utility that will shut down a Windows NT/XP/VISTA/2000/2003/2008 computer.

Command: GS_Shutd

Description:

Shutdown a Windows NT/XP/VISTA/2000/2003/2008 computer. The computer will shutdown in about 40 seconds after the command is executed. GUI users will receive a notification.

Syntax: Gs_Shutd [Computer]

Arguments: There is 1 optional argument

> [computer name] - the name of the computer to shutdown. If the computer name is omitted then the Windows NT/XP/VISTA/2000/2003/2008 computer that the command is executed will be shutdown.

Notes: Administrative privileges are required to run this command.

Warnings: The system administrator must be sure that they want to shutdown, as all user sessions will be disconnected.

EXAMPLE - UTILITIES: SHUTDOWN WINDOWS NT/XP/VISTA/2000/2003/2008 SYSTEM

Shutdown the computer soloman

```
Gs_Shutd soloman
```

You will then be prompted with:

```
You have requested to shutdown soloman.

If you continue all applications with unsaved data will be forcibly
closed in 40 seconds.

Do you really want to continue? [Yes/No]
```

You must type either `Yes` or No and press `<enter>`. "Y" or "N" is not valid.

In approximately 40 seconds the Windows NT/XP/VISTA/2000/2003/2008 Computer will shutdown.

Remote Registration Utility

Apply the serial number from a remote location via SSH2/Telnet .

In some instances you may need to apply the serial number from a remote location. The Georgia SoftWorks Remote Registration Utility provides the capability. This can be done when upgrading to a new version or permanently activating a trial version of the software.

Syntax is:

```
GS_RR serial_number
```

Where `serial_number` is the serial number is obtained from Georgia SoftWorks.

NOTE: You must have SSH2/Telnet connectivity to the server, either during the trial period or an already registered installed copy.

To run the Remote Registration utility:

1. Send the Product ID to Georgia SoftWorks as defined on page 21.
2. Georgia SoftWorks will email or fax the serial number back to you. The serial number will look something like: `D25EEAF8AF1692EB0F9A5DE28520FD8407F8632CC5D8`
3. Connect to the Server via SSH2/Telnet that you want to register.
4. Change to the SSH2/Telnet installation root folder. This is the folder where the SSH2/Telnet server was installed.
5. Run the Remote Registration Utility.

   EXAMPLE - REMOTE REGISTRATION VIA SSH2/TELNET .

   At the command prompt enter:

   ```
   gs_rr D25EEAF8AF1692EB0F9A5DE28520FD8407F8632CC5D8
   ```

   and press <ENTER>.

   You will receive a Banner String followed by three dots. The text wait is displayed while the serial number is being validated.

Upon completion the message "Registration Successful" will be displayed.

Special Bell Processing

The Georgia SoftWorks SSH2/Telnet Server can intercept a special character written to the application's screen and send a bell character to the terminal (in the place of the intercepted character). The number of times that the bell will sound is also configurable. The default count is 1. The Special Character, Location and Bell Count, are defined using Registry Values.

Usually the application can identify a normally unused position on the screen that can be used for the placement of the special character.

This location is specified in the registry as described below.

Registry Parameters are located:

HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\GS_Tnet\Parameters

BellX - column of the bell character, initialized to 0xffffffff, which makes it inactive.

BellY - row of the bell character, initialized to 0xffffffff, which makes it inactive.

BellChar - value of the bell character, initialized to 0x87

BellCnt - value for the number of times that the bell will sound, initialized to 0x01

All four parameters work for all types of clients, including the `gs_admin`. In order to disable the feature: set BellX or BellY to `0xffffffff`.

NOTE 1: The Special Character will be automatically replaced with a space character on the screen.

NOTE 2: The top left screen position is defined as 1,1.

EXAMPLE - CONFIRM OPERATION OF SPECIAL BELL PROCESSING

Perform these steps for a quick test to verify that the Special Bell Processing is operating. This example is useful for testing purposes.

Objective: The Bell will sound when the character `5` is entered on the 15th column of the 3rd row on the screen.

As indicated above user the registry editor to set values for the BellX to 15 (0f), BellY to 3 (03) and BellChar to '`5`' (35).

Next start a SSH2/Telnet session. At the command prompt, clear the screen go to 3rd line and start typing character 5 until you get to column 15. When you get to the 15th column you should hear the bell and the digit 5 will not be visible because SSH2/Telnet server will replace it with space.

TTY Name

The Georgia SoftWorks SSH2/Telnet Server creates a `tty` name on a per session basis. This is available for viewing or use by customer created programs.

The environment variable created is:

gwtn_tty

And is set to */dev/ttypxxx*, where *xxx*

represents the socket number (handle) for user's session.

Client Scroll Bars

You may enable scroll bars on the Windows NT/XP/VISTA/2000/2003/2008 client window. This is accomplished by changing the buffer size for the DOS window. You must be careful that the application can handle a modified buffer size. Unpredictable display results will occur if this is not the case.

For GSW Mobile Client scrollbar options please see page 35.

Setting a Default Domain

In some instances the System administrator may want to eliminate the prompting for a domain when the user is connecting to the SSH2/Telnet server. This can be accomplished by setting the default domain registry variable. This works for 3rd party clients only. Use the command line parameters to set the default domain for the Georgia SoftWorks SSH2/Telnet Client. (See page 65)

This is accomplished as follows.

The key is:

HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\GS_Tnet\Parameters\Domain

0. Click the **Start** button at the bottom left corner of your screen.
1. Click **RUN**
2. Type `REGEDT32`
3. Click **OK**
4. Select Windows item **HKEY_LOCAL_MACHINE**
5. Select the menu item **Edit**
6. Move the mouse pointer and click **Find**
7. Type **`Domain`**
8. Click on **Find Next**
9. Select the menu item **Edit** and then click on **Modify**
10. Enter the new value for the Domain and click **OK**

The new Domain will take effect for all new sessions.

This registry value is initialized to "UNKNOWN" which disables a default domain. The empty string means the default domain. This is equivalent to pressing enter when prompted. This will eliminate prompting for users of all clients.

3rd Party Client - Default Domain Override

The user may override the default domain when using a 3rd party client when connecting via Telnet or SSH2. When a default domain is set the GSW UTS does not prompt for the domain and automatically applies the domain set in the registry.

If the user needs to override the default domain, then the optional syntax described below can be used when logging on to the UTS to select a different domain.

The domain can be specified (along with the username) when the user is prompted for the Windows User Name. The domain override syntax is different depending if you are connecting via Telnet or SSH2.

TELNET

When connecting via Telnet the syntax is the domain name followed by the backslash followed by the username.

```
domainname\username
```

SSH2

When connecting via SSH2 the syntax is the username followed by the "AT" sign followed by the domain name.

```
username@domainname
```

Setting the Telnet Port or Multiple Ports

The default port for telnet is port 23 and NO configuration is required unless you want to change or add telnet ports.

Note: These features are available for the Telnet Server only.

Use an Alternative Telnet Port.

To use a different telnet port (other than the default) for the GSW Telnet Server you need to create an entry like:

```
gstnet          55555/tcp
```

in the *Services* file on the server and restart the NT/XP/VISTA/2000/2003/2008 Telnet Server. Replace the 55555 with another port number if necessary. You will have to explicitly specify the alternate port number when starting the connection from 3rd party clients and the Georgia SoftWorks Telnet Client (page 66).

On Windows NT/XP/VISTA/2000/2003/2008 the services file is located in the directory:

<Windows Root>`\system32\drivers\etc`

The file is named *Services*.

Configure Multiple Telnet Ports

The capability exists to configure up to 100 ports for the Georgia SoftWorks Telnet Server to listen on. Use the etc/services file to configure port names[30] **`gstnet1`** through **`gstnet100`**.

The following example will configure 5 Telnet Ports.
Edit the file *Services* file as described above. Add the following entries. Notice that you may use any of the one hundred port names and that they do not have to be in order.

```
gstnet1             23/tcp
gstnet2             14002/tcp
gstnet5             14005/tcp
gstnet6             14006/tcp
gstnet10            14010/tcp
```

Telnet will now listen on the above five ports.

To further take advantage of this feature you can use the environment variable:

```
gwtn_server_port
```

to access the port number associated with your current session.

[30] For backward compatibility `gstnet1` is the same as `gstnet`, `lratnet`, and `telnet`. If `gstnet1` is found then `gstnet`, `lratnet` and `telnet` are not considered.

To view the port number associated with your session at the command prompt enter:

```
echo %gwtn_server_port%
```

If you have multiple telnet ports configured you may want to have a different task process the information that comes in on each port. Here is an example of a logon script which uses the port information to branch to different tasks based on the port number.

```
@if %gwtn_server_port%==23 goto label23
@if %gwtn_server_port%==14002 goto label14002
@if %gwtn_server_port%==14005 goto label14005
@if %gwtn_server_port%==14006 goto label14006
@if %gwtn_server_port%==14010 goto label14010
@echo port not found
@pause
@goto labelend

@:label23
@echo About to run app23
@pause
@rem Put your code to run23 app here
@goto labelend

@:label14002
@echo About to run app14002
@pause
@rem Put your code to run14002 app here
@goto labelend

@:label14005
@echo About to run app14005
@pause
@rem Put your code to run14005 app here
@goto labelend

@:label14006
@echo About to run app14006
@pause
@rem Put your code to run14006 app here
@goto labelend

@:label14010
@echo About to run app14010
@pause
@rem Put your code to run14010 app here
@goto labelend

@:labelend
```

Georgia SoftWorks Java Telnet Applet

Note: This feature applies to the Telnet Server only.

The Georgia SoftWorks Java Client (GSJC) is an applet that allows you to add web-based capabilities to your MS DOS or Win32 Console application. Leverage platform independence for remote access to the Georgia SoftWorks Telnet Server by providing access from the most popular browsers such as MS IE and Netscape.

Allow telnet connectivity from any platform with TCP/IP based connectivity and a Java 1.1 (or higher) enabled browser. This can include platforms ranging from RF Terminals to mainframe computers.

Many of the powerful features found in the standard Georgia SoftWorks telnet client such as Mouse support, DOS Character Mode Color Graphics, excellent keyboard support and client side printing are now available in the GSJC.

This section contains information which webmasters need to create web pages including the Georgia SoftWorks Java Telnet Client.

Required Java support

Java language 1.1 or higher enabled browser.

The above includes Internet Explorer 4.0 and higher, Netscape Communicator 4.7 and higher.

Required Files for the GSJC.

The Georgia SoftWorks Java Client may be distributed as a .jar file, .cab file, or a set of class files.

Required Files

- `gsjc.jar` - This is the Java archive file for all browsers supporting .jar files. For example: Netscape Communicator or Internet Explorer with the Java Plug-In (JRE 1.2)

OR

- `gsjc.cab` - This is the cabinet file used for Internet Explorer Browsers when Java Plug-In is not used.

Client Side Printing - All Browsers

Client side printing requires the Java 1.2 Plug-In (JRE 1.2)
(Unless you are using IE 4.0+)

- Java 1.2 Plug-In - This is required for client side printing.
  http://java.sun.com/products/plugin/1.2/jinstall-12-win32.cab#Version=1,2,0,0

Required Files for Client Side Printing with Internet Explorer 4.0+

If you are using Internet Explorer 4.0 or higher you can simply use the gsjc.cab file INSTEAD of the gsjc.jar and the Java 1.2 Plug-In is not required.

Client Side Printing Capabilities:

Client Side Printing is implemented through the print command applet parameter. This parameter specifies the print command that is used locally (client machine) to print the spool file[31]. The print command specified depends on the printing facilities available to your client machine.

For example:
AIX UNIX will use the "lpr" command and
Windows 98 will use the "copy" command and
Windows NT/XP/VISTA/2000/2003/2008 will use the "print" command.

If the print commands parameter is not specified the behavior is as follows.
Windows NT/XP/VISTA/2000/2003/2008 will print on the default printer using the print command. Other operating systems will attempt to print using the Java graphics engine (which does not always produce expected results).

The full capabilities that exist with the standard Georgia SoftWorks Telnet Client are available.

[31] The spool file is the "data to print" received from the server.

GSJC Applet parameters

Applet parameters are provided to supply configuration information to the telnet server just as with the standard Georgia SoftWorks Telnet Client. The parameters include:

NOTE: The syntax provided is an example and is different based on the type of browser interpreting the commands.

Optional Parameter: port
Description: host's port to connect to. (see page 227)
Default: Port 23
Syntax: <PARAM NAME=port VALUE="23">

Optional Parameter: user
Description: NT/2000/XP User ID
Default: No default. The user will be prompted (see page 66)
Syntax: <PARAM NAME=user value="Smith">

Optional Parameter: password
Description: Password for NT/2000/XP User ID
Default: No default. User will be prompted (see page 66)
Syntax: <PARAM NAME=password value="mypassword">
Note: Security may be compromised if this parameter is used.

Optional Parameter: domain
Description: NT/2000/XP Domain for the user (see page 66)
Default: No Default, user will be prompted
Syntax: <PARAM NAME=domain value="mydomain">

"" uses the default domain.

Optional Parameter: address
Description: Indicates the address of the host computer to connect.
Default: No default. User will be prompted (see page 62)
Syntax: <PARAM NAME=address value="Host IP Address">

Optional Parameter: useTopLeftLocation
Description: Places the work area in the top left corner of the rectangle specified for the applet.
Default: The default value is FALSE indicating that the work area is centered inside the applet's rectangle.
Syntax: <PARAM NAME=useTopLeftLocation value="True|False">

Optional Parameter: useMSDOSFrame
Description: Specifies if the classic MSDOS frame will be drawn around the work area of the applet. .
Default: The default value is TRUE.
Syntax: <PARAM NAME=useMSDOSFrame value="True|False">

Optional Parameter: useBorders
Description: Specifies if borders will be drawn around the applet. FALSE specifies that no boarders shall be drawn and all non-work areas of the applet will be eliminated.
Default: The default value is TRUE.
Syntax: <PARAM NAME=useBorders value="True|False">

Optional Parameter: useBoldFont
Description: Tells the applet to use the bold font..
Default: True
Syntax: <PARAM NAME=useBoldFont value="True|False">

Optional Parameter: bkgColor
Description: Background color for the area around the GSJC Window.
Default: 000080 (This is blue)
Syntax: <PARAM NAME=bkgColor value="000080">
The format is RRGGBB in hex.

Optional Parameter: HBTime
Description: Heartbeat Time in seconds. (see page 109)
Default: 20
Syntax: <PARAM NAME=HBTime value="20">

Optional Parameter: useEncryption
Description: Enables Encryption and forces Login Encryption. (see page 80)
Default: FALSE
Syntax: <PARAM NAME=useEncryption value="true">
Additionally, Complete Date Stream Encryption can be enabled via the logon scripts as per our standard method. (see page 78).

Optional Parameter: printCommand
Description: Specifies the print command used by the client computer in conjunction with Enhanced printing.
Default: NT Systems will use print.exe
Non-NT systems will use java printing through the graphics engine.
Syntax: <PARAM NAME=printCommand value="command.com /C copy ??? lpt1:">

the ??? is a wildcard which will be replaced during printing by the actual print file name. The above example assumes a printer on lpt1. The example works on Win95/98. Please see the Enhanced printing (Page 166) documentation for further examples and details.

Provisioning of the User, Password and Domain parameters by the applet will eliminate prompting for these values by the Georgia SoftWorks Telnet Server.

Sample web page for systems with Java Plug-In installed.

```
<HTML>
<HEAD>
<META NAME="GENERATOR" Content="Microsoft Visual Studio 6.0">
</HEAD>
<BODY>
<OBJECT classid="clsid:8AD9C840-044E-11D1-B3E9-00805F499D93"
  WIDTH=640
  HEIGHT=520
  codebase="http://java.sun.com/products/plugin/1.2/jinstall-12-
win32.cab#Version=1,2,0,0">

  <PARAM NAME=JAVA_CODE VALUE=GSJC.class >
  <PARAM NAME=CABBASE VALUE=GSJC.CAB >
  <PARAM NAME="type" VALUE="application/x-java-applet;version=1.2">

  <PARAM NAME=port VALUE="23">
  <PARAM NAME=user value="test1">
  <PARAM NAME=password value="test1">
  <PARAM NAME=domain value="">
  <PARAM NAME=bkgColor value="008000">
  <PARAM NAME=HBTime value="20">
  <PARAM NAME=useEncryption value="false">

  <COMMENT>
    <EMBED type="application/x-java-applet;version=1.2"
    WIDTH=640
    HEIGHT=520
    CODE=GSJC.class
    archive=gsjc.jar

    port="23"
    user="test1"
    password="test1"
    domain=""
    bkgColor="000080"
    HBTime="20"
    UseEncryption="false"



    pluginspage="http://java.sun.com/products/plugin/1.2/plugin-install.html">
      <NOEMBED>
  </COMMENT>
        No Java support for applet.
      </NOEMBED>
    </EMBED>
</OBJECT>

</BODY>
</HTML>
```

Sample web page for systems with MS IE 4.0 and higher.

```
<HTML>
<HEAD>
<META NAME="GENERATOR" Content="Microsoft Visual Studio 6.0">
</HEAD>
<BODY>

<!-- Insert HTML here -->
      <applet
            code=GSJC.class
            name=GSJC
            width=640
            height=520 >
            <param name=cabbase value=gsjc.cab>
            <param name=port value="23">
            <param name=user value="test1">
            <param name=password value="test1">
            <param name=domain value="">
            <param name=bkgColor value="008080">
            <param name=HBTime value="20">
            <param name=useEncryption value="false">

      </applet>

</BODY>
</HTML>
```

Sample web page for systems with Netscape Communicator.

```
<HTML>
<HEAD>
<META NAME="GENERATOR" Content="Microsoft Visual Studio 6.0">
</HEAD>
<BODY>

<!-- Insert HTML here -->
      <applet
            code=GSJC.class
            name=GSJC
            archive VALUE=gsjc.jar
            width=640
            height=520 >
            <param name=port value="23">
            <param name=user value="test1">
            <param name=password value="test1">
            <param name=domain value="">
            <param name=bkgColor value="008080">
            <param name=HBTime value="20">
            <param name=useEncryption value="false">

      </applet>

</BODY>
</HTML>
```

Sample web page for systems with other browsers.

The page below may be needed for browsers, which do not support cab files and jar files.

```
<HTML>
<HEAD>
<META NAME="GENERATOR" Content="Microsoft Visual Studio 6.0">
</HEAD>
<BODY>

<!-- Insert HTML here -->
      <applet
            code=GSJC.class
            name=GSJC
            width=640
            height=520 >
            <param name=port value="23">
            <param name=user value="test1">
            <param name=password value="test1">
            <param name=domain value="">
            <param name=bkgColor value="008080">
            <param name=HBTime value="20">
            <param name=useEncryption value="false">

      </applet>

</BODY>
</HTML>
```

Applet size

Applet uses size specified through the width and height parameters. The telnet window uses Java's "courier" font of size, which gives best fit for the applet dimensions, specified. Some experimentation may be necessary to get desired appearance.

Georgia SoftWorks Java Telnet Client

Note: This feature applies to the Telnet Server only.

The Georgia SoftWorks Java Telnet Client (GSJC) is a standalone application that allows telnet connectivity to the Georgia SoftWorks Telnet Server without a browser.

Using the Georgia SoftWorks Java Client provides many of the powerful features such as Complete Data Stream Encryption, Mouse support, DOS Character Mode Color Graphics, excellent keyboard support and client side printing. Additionally this is accomplished without any web server setup. The client side parameters are passed from the command line or menu options at the client computer.

Required Java Support

Java language 1.1 or higher.

Required Files for the GSJC.

The following files should be installed in a directory or folder.

Writer.class
Console.class
GetOpt.class
GS_Crypt.class
GS_NullCrypt.class
GS_CryptixCrypt.class
GS_Print.class
GSJC$1.class
GSJC$2.class
GSJC$dlgConnectCancelHandler.class
GSJC$dlgConnectOKHandler.class
GSJC$mniConnectHandler.class
GSJC$mniDisconnectHandler.class
GSJC$mniExitHandler.class
GSJC$mniUseEncryptionHandler.class
GSJC.class
Reader.class
SpChars.class
Telnet.class
Console$1.class
buttons.gif
msdos.gif

Additionally a path must be set to give access to the `JavaSoft\Jre\1.2\bin` directory or folder.

Invoking the GSJC

For Example: **`java GSJC -utest1 -ptest1 -d. -c -h209.86.40.83`**
Command lines parameters are the same as with the standard Georgia SoftWorks Telnet Client. (See page 66)

Encryption

Encryption requires the use of JRE 1.2 (Java 2) and Cryptix libraries. These are available from Cryptix, which is an international volunteer effort to produce robust, open-source cryptographic software libraries.

Cryptix products are free, both for commercial and non-commercial use and are being used by developers all over the world.

www.cryptix.org

The product required is called Cryptix. JCE was planned for official release in February 2000.
Download the cryptix-jce-20000211.zip from http://www.cryptix.org/products/jce/
After you unzip the cryptix files, copy these two files:

```
cryptix-jce-api.jar
cryptix-jce-provider.jar
```

to your `jre/lib/ext` directory.

Frequently Asked Questions

My MSDOS applications execute very slow, even on a high performance system. Is there anything I can do?

Yes, you can use the Georgia SoftWorks DOSBOSS to boost the performance of your MSDOS application when running under NT. (Page 95)

Can I use a port other than port 23 for the Telnet Server

Yes, you can use an alternative port for the Georgia SoftWorks Telnet Server.

Note: This feature applies to the Telnet Server only.
You will need to create an entry like:

```
gstnet          55555/tcp
```

in the *Services* file on the server and restart the GSW Telnet Server. Replace the 55555 with another port number if necessary. You will have to explicitly specify the alternate port number when starting the connection from 3rd party clients and the Georgia SoftWorks Telnet Client (page 66).

On Windows NT/XP/VISTA/2000/2003/2008 the services file is located in the directory:

<Windows Root>\system32\drivers\etc

The file is named *Services*.

Can I SSH2/Telnet to the SSH2/Telnet server and then SSH2/Telnet to another server?

The short answer is Yes. If you SSH2/Telnet to the GSW SSH2/Telnet Server and you then want to SSH2/Telnet to another GSW SSH2/Telnet server you simply run the gs_clnt.exe/gs_ssh.exe program at the DOS command line. However if you want to SSH2/Telnet to a non-Georgia SoftWorks SSH2/Telnet server you will need a 3rd party DOS client that can be executed from the command line.

Very interesting opportunities exist with this capability. For example a user may want secure access to their corporate network from remote locations such as a customer site or hotel. They can connect to the GSW SSH2 Server from the remote site. Once the secure connection has been established to the SSH2 server, they can now telnet to a telnet server on the corporate network. There are many possibilities mixing and matching this type of arrangement. Remember that you can only use a Telnet client to connect to a Telnet Server and only use a SSH2 client to connect to a SSH2 Server.

I can't logon fromSSH2/Telnet, what should I do?

The typical rule is that if you can log in locally to the Windows NT/XP/VISTA/2000/2003/2008 machine then you can logon from SSH2/Telnet. Make sure that you can logon locally. Users must have "log on Locally" access permissions. From "User Manager" or "User Manager for Domains" choose the menu item "Policies" which is a drop down. From the drop down choose "User Rights". A "User Rights Policy "dialog appears allowing you to add the "Log on Locally" Right for the group.

However if the local group *Gwtn Users* exists you must be a member of this group to logon via SSH2/Telnet . If you continue to have trouble please see the technical support (page 258) section of this user manual to expedite resolution of the issue.

I am the Administrator but gs_admin.exe says I do not have permission to run Session Administrator.

To use the GSW Session Administrator a user must belong to the local group *Gwtn Monitors*. The system administrator must first create the group *Gwtn Monitors*. Next all users allowed to use the Session Administrator must be added to the group. You **will** have to restart the Windows NT/XP/VISTA/2000/2003/2008 server after creating the group and adding users. Windows NT/XP/VISTA/2000/2003/2008 does not instantaneously update the group membership after the user manager is closed.

I want to set the background color on the client Window and make it distinct from the standard MSDOS Windows?

You need to use the COLOR Command in a logon script. Here is the syntax.:

```
COLOR [attr]
```

Sets the default console foreground and background colors.

`attr` Specifies color attribute of console output

Color attributes are specified by TWO hex digits -- the first corresponds to the background; the second the foreground. Each digit can be any of the following values:

0 = Black	8 = Gray
1 = Blue	9 = Light Blue
2 = Green	A = Light Green
3 = Aqua	B = Light Aqua
4 = Red	C = Light Red
5 = Purple	D = Light Purple
6 = Yellow	E = Light Yellow
7 = White	F = Bright White

If no argument is given, this command restores the color to what it was when CMD.EXE started. This value either comes from the current console window, the /T command line switch or from the DefaultColor registry value.

The COLOR command sets ERRORLEVEL to 1 if an attempt is made to execute the COLOR command with a foreground and background color that are the same.

Example: `"COLOR fc"` produces light red on bright white

I want to change the size of the window. The client is set to 80x40 but when it connects to the server it reverts back to 80x25.

The mode command will address this issue.

Mode con[:] [cols=c] [lines=n]

Try putting

```
mode con: LINES=40
```

in your logon script.

How do I eliminate prompting for the various settings when using 3rd party clients?

Environment and registry variables exist such that when defined will be used as defaults eliminating the prompting for those values when connections are established. The environment variables can be set in either Global or Per User Logon Scripts. For a list of the environment variable please see the section on 3rd party clients (page 117) in the User Manual and/or the section on Environment (page 236) and Registry variables (page 253).

Can I eliminate prompting for the Host, UserID and Password?

When using the Georgia SoftWorks SSH2/Telnet Client the Host, User ID and Password can be specified as a command line options. You can modify the command line options by editing the file `GS_SClnt.bat`. Please see page 65 for the section in the User Manual on
Georgia SoftWorks Desktop Client Command line options.

Can I eliminate prompting for the Domain?

Yes. For all 3rd party clients a registry variable can be set that will contain the default domain for all connections. This is described on page 213. When using the Georgia SoftWorks SSH2/Telnet client you may use command line options to set the default domain to eliminate prompting. This is described on page 66.

Can I connect from older systems with DOS or Windows 3.1

Yes however you must have a 16-bit client. The Georgia SoftWorks SSH2/Telnet Client is 32 bit and requires Windows 95/98 or Windows NT/XP/VISTA/2000/2003/2008 . Several 16-bit clients can be found on the Internet.

Can I have the user deposited into a specific directory upon connection?

Yes. You may set the environment variable **`gwtn_home_dir`** in the logon script on either a global or per user basis.

```
set gwtn_home_dir=d:\users\tom
```

Can I restrict user access to specific directories?

In order to restrict user's access to specific directories you must first make sure that all of your drives use NTFS. Next use Windows NT/XP/VISTA/2000/2003/2008 Explorer|File|Properties|Security|Permissions to grant or deny access to specific drives, directories, or files.

Is there any way to get the bell to sound on the client?

For customers that have control over the development of their own applications the answer is yes. Please see page 210 for detailed instructions.

Can I start and stop services when connected via SSH2/Telnet ?

Yes. The commands "`net start`" and "`net stop`" provide this ability. Please execute the "`net start ?`" or "net stop ?" from a Windows NT/XP/VISTA/2000/2003/2008 command prompt for the details on the "`net`" commands and parameters.

Can I configure user information when connected via SSH2/Telnet ?

Yes. The commands "`net user ...`", "`net account ...`" etc. provide this capability. Please execute the "`net user ?`" or "`net account ?`" from an Windows NT/XP/VISTA/2000/2003/2008 command prompt for the details on the "`net`" commands and parameters.

Control-C is not working as expected. What can I do?

Several valid behaviors exist for Control-C. The Georgia SoftWorks SSH2/Telnet Server allows explicit configuration of the behavior for control-c on either a global or per user basis by using the environment variable **gwtn_ctrl_c_mode** (see page 116).

I changed the IP Address of my Server and SSH2/Telnet does not work anymore?

After changing the IP address you should stop and start the SSH2/Telnet Server. This can be done through the Windows NT/XP/VISTA/2000/2003/2008 Control Panel. If this does not help you must reboot the server.

I get extra form feeds when printing from certain applications when using the Enhanced Print mode. What can I do?

The client side printing option *-f* may help suppress additional form feeds. Please see page 68.

How can I print to Portable Printers when I am using SAPConsole?

Using the GSW True Client Side Printing you CAN print to portable printers when in SAPConsole. Please see page 236.

Why do my print jobs print on somebody else's printer?

It is required that each user be logged in only once for the Enhanced, Open and Pass-through Print methods to operate correctly. That means that each workstation/RF device must use a different User Id when connecting to the server. When a print job for one of these print methods is redirected, the redirection is based on the owner of the print job. The owner is the same as the User Id, thus if more than one User Id is connected then the print job is redirect and the destination selected will at best be random.

I am using FoxPro and my system is running out of memory. Upon inspection of the Task Manager I can see that my NTVDMs are consuming all available memory. What should I do?

The solution for many customers is to limit the memory which FoxPro can use per instance. This can be done via the config.fp or config.fpw file. The memory may be limited using the MEMLIMIT command. More information can be found by view Microsoft Knowledge Base article 123281. There is abundant information on this topic on the internet using search engines.

One or more keys are not working properly under VT220 Emulation. Please Advise.

VT220 Terminal Emulators from different vendors may not have standard key mappings.

For each key that does not work please verify that the escape sequence programmed in your terminal emulator matches the table below. Most of the emulators (the program running on your *RF device*, *client PC or terminal*) provide the capability to edit the escape sequence sent when a specific key is pressed.

The table below shows the escape sequences that the GSW SSH2/Telnet Server expects to receive from the terminal running the VT220 emulation.

Georgia SoftWorks SSH2/Telnet Server www.georgiasoftworks.com Industry Standard VT220 Key Mapping					
	Key Code	**Action**		**Key Code**	**Action**
	ESC [D	Cursor left		ESC O P	F1
	ESC O D	Cursor left		ESC O Q	F2
	ESC [B	Cursor down		ESC O R	F3
	ESC O B	Cursor down		ESC O S	F4
	ESC [A	Cursor up		ESC [M	F5
	ESC O A	Cursor up		ESC [1 5 ~	F5
	ESC [C	Cursor right		ESC [1 7 ~	F6
	ESC O C	Cursor right		ESC [1 8 ~	F7
	ESC O l	Keypad STAR		ESC [1 9 ~	F8
	ESC O m	Keypad MINUS		ESC [2 0 ~	F9
	ESC O M	Keypad ENTER		ESC [2 1 ~	F10
	ESC O n	Keypad DELETE		ESC [2 3 ~	F11
				ESC [2 4 ~	F12
	ESC O p	Keypad 0_INS		ESC [2 5 ~	SHIFT-F1
	ESC O q	Keypad 1_END		ESC [2 6 ~	SHIFT-F2
	ESC O r	Keypad 2_DOWN		ESC [2 7 ~	SHIFT-F3
	ESC O s	Keypad 3_PAGEDOWN		ESC [2 8 ~	SHIFT-F4
	ESC O t	Keypad 4_LEFT		ESC [K	SHIFT-F5
	ESC O u	Keypad 5		ESC [3 1 ~	SHIFT-F6
	ESC O v	Keypad 6_RIGHT		ESC [3 2 ~	SHIFT-F7
	ESC O w	Keypad 7_HOME		ESC [3 3 ~	SHIFT-F8
	ESC O x	Keypad 8_UP		ESC [3 4 ~	SHIFT-F9
	ESC O y	Keypad 9_PAGEUP		ESC [3 5 ~	SHIFT-F10
	ESC [U	Page down		ESC [3 6 ~	SHIFT-F11
	ESC [6 ~	Page down		ESC [3 7 ~	SHIFT-F12
	ESC [H	Home			
	ESC [1 ~	Home			
	ESC [V	Page up			
	ESC [5 ~	Page up			
	ESC [2 ~	Insert			
	ESC [3 ~	Delete			
	ESC [4 ~	End			
	ESC [Z	Tab Backward			

Table 34 - VT220 Industry Standard Key Mapping

Discussion: Orphaned NTVDM's and Windows NT/XP/VISTA/2000/2003/2008 SSH2/Telnet Servers

What are NTVDM's and why are they important for Windows NT/XP/VISTA/2000/2003/2008 SSH2/Telnet Servers?

NTVDM's are Windows Virtual DOS Machines. For Windows to run DOS programs, Windows creates a Windows VDM that provides a DOS environment for the DOS program to reside.

When are NTVDM's created?

When DOS applications are executed a NTVDM is created. A normal SSH2/Telnet scenario is to connect to a Windows system and run a DOS application. Windows will create a NTVDM. This is all fine and normal.

What are Orphaned NTVDM's?

Normally during a SSH2/Telnet session running a DOS application, upon completion of the application the user will exit the application properly. In this situation the NTVDM is properly terminated. However problems occur when a SSH2/Telnet session running a DOS application abnormally terminates.
The SSH2/Telnet session will normally terminate however the NTVDM will not terminate. This leaves what is called an orphaned NTVDM. Some term this *rouge* or *phantom* NTVDMs or processes.

Why is this a concern?

These *orphaned* NTVDM's are a serious problem to the Windows System. They will start consuming all the processing resources of the Windows system that results in the severe degradation of all other processes on the system. This is not just a slight slowing down of the system but a slowing down to the point of the system being useless by most users' standards. The most common way to clear the NTVDM is to reboot the Windows system. However if you are skilled you can kill the orphaned processes.

What types of events cause orphaned NTVDM when using SSH2/Telnet?

Any abnormal terminal of a client can cause an orphaned NTVDM. One easy way to create an NTVDM with SSH2/Telnet simply to power off the Client PC while running a DOS program via SSH2/Telnet. For example:

1. SSH2/Telnet from a remote Client PC to a Windows NT/XP/VISTA/2000/2003/2008 System.
2. Run a DOS application. (Such as Edit, Norton Commander etc).
   At this point a NTVDM is created. You can observe this on the SSH2/Telnet Server by:
   a. Typing Ctrl-Alt-Delete on the server and select the Task List
      1. Select processes and observer the NTVDM that was created.

3. Power down the Client PC.
4. On the SSH2/Telnet Server, observe that the NTVDM is still running. In many cases you will notice that after a few minutes the processing percentage will increase to 90+%.

Having multiple SSH2/Telnet sessions connected running DOS applications when an abnormal termination occurs can exacerbate this problem.

Frequent scenarios for abnormal terminations

1. Power Failure for Client PC.
    1. Power Hit in building
    2. Breaker trip, Client PC or Power strip accidentally unplugged
2. Client PC powered down without properly exiting the DOS application
3. Client PC OS locks up
4. Link Failure

What can be done about Orphaned NTVDM's?

The Georgia SoftWorks SSH2/Telnet Server for Windows NT/XP/VISTA/2000/2003/2008 automatically provides advanced detection and elimination for orphaned NTVDM's. Unlike others that claim to handle this serious problem, the Georgia SoftWorks SSH2/Telnet Server actually detects and eliminates these process consuming tasks in a remarkably quick time minimizing the impact on other users and tasks on the system. The Georgia SoftWorks SSH2/Telnet Client accomplishes detection via the configurable heartbeat timer and third party SSH2/Telnet clients utilize the configurable Server Side Heartbeat Timer. Upon detection sophisticated algorithms are used to identify orphaned NTVDM and eliminate them.

Discussion: PIFs and your MS-DOS application's Performance

Information derived and extracted from the Microsoft Knowledge base.

Windows NT/XP/VISTA/2000/2003/2008 provides a fully integrated command prompt that enables you to launch both Windows-based and MS-DOS-based applications. Although the concept of running an MS-DOS-based application in a Windows-based environment may be familiar to you, Windows NT/XP/VISTA/2000/2003/2008 handles this somewhat differently than Windows (16-bit) does.

The essential difference lies in the command prompt itself; under Windows NT/XP/VISTA/2000/2003/2008, the command prompt is a 32-bit Windows based application, not the virtual MS-DOS machine you would expect from Windows. Under Windows NT/XP/VISTA/2000/2003/2008, until you start an MS-DOS-based application, no virtual MS-DOS machine is created. Furthermore, once you start an MS-DOS-based application, its virtual MS-DOS machine is used for all subsequent MS-DOS-based applications started from the same command prompt.

As in Windows, each MS-DOS-based application can have a program information file (PIF). If there is no PIF for a particular application, the default PIF, _DEFAULT.PIF, is used. Because Windows NT/XP/VISTA/2000/2003/2008 only uses the PIF from the first application started in any given command prompt, you may need to take special care in the way you start your applications. For example, if you design a PIF that allocates some EMS memory, it is important that you start the associated application first; otherwise, the EMS memory may never be allocated. You may start a Windows NT/XP/VISTA/2000/2003/2008 command prompt and then run the MS-DOS command, MEM, to see how much memory you have free. Because MEM is another MS-DOS-based application, Windows NT/XP/VISTA/2000/2003/2008 creates a virtual MS-DOS machine, probably using _DEFAULT.PIF. After MEM finishes, you start the application you created the PIF for. Unfortunately, because _DEFAULT.PIF doesn't instruct Windows NT/XP/VISTA/2000/2003/2008 to allocate EMS memory, your application reports that it can find no EMS memory. Rechecking the PIF you created does not solve the problem. You need to start another command prompt and then make sure to start your EMS-requiring application first, before you start any other MS-DOS-based applications.

There is one more difference to be aware of: each PIF contains a pointer to AUTOEXEC and CONFIG files. Usually these default to the Windows NT/XP/VISTA/2000/2003/2008 versions, AUTOEXEC.NT and CONFIG.NT. If you want to change environment variables for your MS-DOS-based applications, you need to point their PIFs to different files or modify the default ones. (To see these files and their locations, run PIF Editor and choose Windows NT.)

If you are not satisfied with the performance of your MS-DOS-based applications on Windows NT, try the following:

Windows NT/XP/VISTA/2000/2003/2008 keeps the same setting in the property (right click) of the MS-DOS-based applications.

• If the application is in a window and the video display performance is slow, try full-screen mode. Windows NT/XP/VISTA/2000/2003/2008 “screen folder” provides this setting.

• Disable the Compatible Timer Hardware feature in the _DEFAULT.PIF or the application's program information file (PIF) under the NT-specific section of PIF Editor. Since this feature causes a decrease in performance, it should be used only if it is required to make an application to run with Windows NT. Windows NT/XP/VISTA/2000/2003/2008 “program folder” under “Windows NT/XP/VISTA/2000/2003/2008” section provides this setting.

•If the application is in a window and seems to pause periodically, try disabling Idle Detection in the Advance section of that application's PIF. Windows NT/XP/VISTA/2000/2003/2008 “misc folder” provides this setting in a form of a slider bar called “idle sensitivity”.

•If the MS-DOS-based application can be configured for printing, choose LPT1, LPT2 over parallel port. Most of the applications use Int17 to print when configured for LPT<x>. If you select parallel port mode, these applications print directly to printer ports. Parallel mode is significantly slower in Windows NT/XP/VISTA/2000/2003/2008 compared to Windows 3.1.

SAPConsole with the Georgia SoftWorks Telnet/SSH2 Server

SSH2/Telnet Connectivity for SAPConsole is not just a Good solution it is the Best Solution!

The speed and efficient bandwidth utilization for telnet/SSH2 connectivity to Windows NT/XP/VISTA/2000/2003/2008 cannot be beat! If SAPConsole and SSH2/Telnet Connectivity are important to your business then your only choice is the Georgia SoftWorks SSH2/Telnet Server.

The Georgia SoftWorks SSH2/Telnet Server **IS** the **Industrial Grade SSH2/Telnet** Server for your SAPConsole RF Application.

The reliability, consistency, performance and features of the GSW SSH2/Telnet Server are unequaled and requirements for today's commercial RF Applications.

- Works great out the box with SAPConsole
  - Use the 3rd SSH2/Telnet Client for your hardware
  - If you have Windows Pocket PC 2002/3 devices then you can use the GSW SSH2/Telnet Client for Pocket PC 2002/3 class machines.
- Easy to install
- The Georgia SoftWorks Industrial Grade SSH2/Telnet Server for Windows NT/XP/VISTA/2000/2003/2008 is installed on every continent on the planet (..except Antarctica)

You can also obtain the GSW Telnet/SSH2 Server from SAP/SAPConsole Experts who can assist with your decision process. See our web site for more information.

This special section contains information on:

Using the GSW SSH2/Telnet Client for Pocket PC 2002/2003 class devices (Page 28).
How to Print Labels on a Portable Printer using SAPConsole (Page 243)
How to automatically launch SAPConsole from a SSH2/Telnet Session (Page 241)
SAPConsole and the Georgia SoftWorks Rocket Terminal Engine. (Page 250)
SAP User Name displayed when using gs_admin. (Page 242)

SAPConsole with the GSW Pocket PC 2002/3 SSH2/Telnet Client

Configuration Steps for the GSW Pocket PC 2002/3 SSH2/Telnet Client.

If you are using the GSW SSH2/Telnet Client for Pocket PC 2002/3 class machines then the following configuration steps may be helpful. Installation of the GSW SSH2/Telnet Client on Pocket PC 2002/3 class is described on page 29 .

1. On the Pocket PC device select one of the following depending on the class of device.

   For Pocket PC 2002: `Start|GSW SSH2/Telnet`
   For Pocket PC 2003: `Start|Programs|GSW SSH2/Telnet`

   This selection will launch the Georgia SoftWorks SSH2/Telnet client.

2. When your run the Georgia SoftWorks SSH2/Telnet client you will be prompted for the connection info as on the picture left below:

Figure 87: SAPConsole - PPC 2002/3 Configuration. Host Prompt

Figure 88: SAPConsole - PPC 2002/3 Configuration - Options Screen

3. Click the Options button to verify the connection options.

4. Press the OK button to leave the Options screen.

5. Press the OK button again to accept the connection info and connect to the server.

6. Wait for the Georgia SoftWorks SSH2/Telnet Client to connect to the server.

You should see the SAP logon screen similar to one on the picture below left.

Figure 89: SAPConsole - PPC 2002/3 Configuration. Logon Screen

Figure 90: SAPConsole - PPC 2002/3 Configuration - Save Changes

….Continued on next page

7. Use SAP.
   Below is an example of the GSW SSH2/Telnet Client for Pocket PC 2003 class devices. Notice that the function keys are available as well as proper placement of the text and fields.

Figure 91: SAP - GSW SSH2/Telnet Client for PPC 2003 - Function Keys

8. Quit SAP application.

9. The GSW Pocket PC 2002 SSH2/Telnet Client will prompt you to save your connection settings so you will not need to reenter them for the next connection. See picture on the right above.

10. Click the 'Yes' button.

11. You will be prompted to select the file name

Figure 92: SAPConsole - PPC 2002/3 Configuration File Name Prompt

Figure 93: SAPConsole - PPC 2002/3 Select Configuration Prompt

12. Next time you use the GSW Pocket PC 2002 SSH2/Telnet Client you will be presented with the screen like the figure on the right above.

13. Simply click on the connection info file and you will get connected.

How to Automatically Launch SAPConsole from A SSH2/Telnet Session

In most instances you will want SAPConsole to automatically launch when the SSH2/Telnet session is connected. This is easily done via the GSW Logon Scripts[32].

Here is an example of what should be in the logon script to automatically launch SAPConsole.

```
c:
cd "\Program Files\SAPpc\sapgui\sapconsole"
sapcnsl
```

If the GSW Rocket Terminal Engine is installed then add the line to set the window size.

```
mode con: lines=16 cols=20
c:
cd "\Program Files\SAPpc\sapgui\sapconsole"
sapcnsl
```

If your screen size is not `16x20` then adjust the `mode` statement to correspond to your screen size.

[32] Detailed information on logon scripts can be found on page 155

SAP User Name displayed in GSW Session Administrator.

When using the GSW Rocket Engine (version 1.39.0002 or later), the SAP User Name will be displayed in addition to the Windows NT/XP/VISTA/2000/2003/2008 user name when using the GSW Session Administrator..

Windows User Name: `luke`

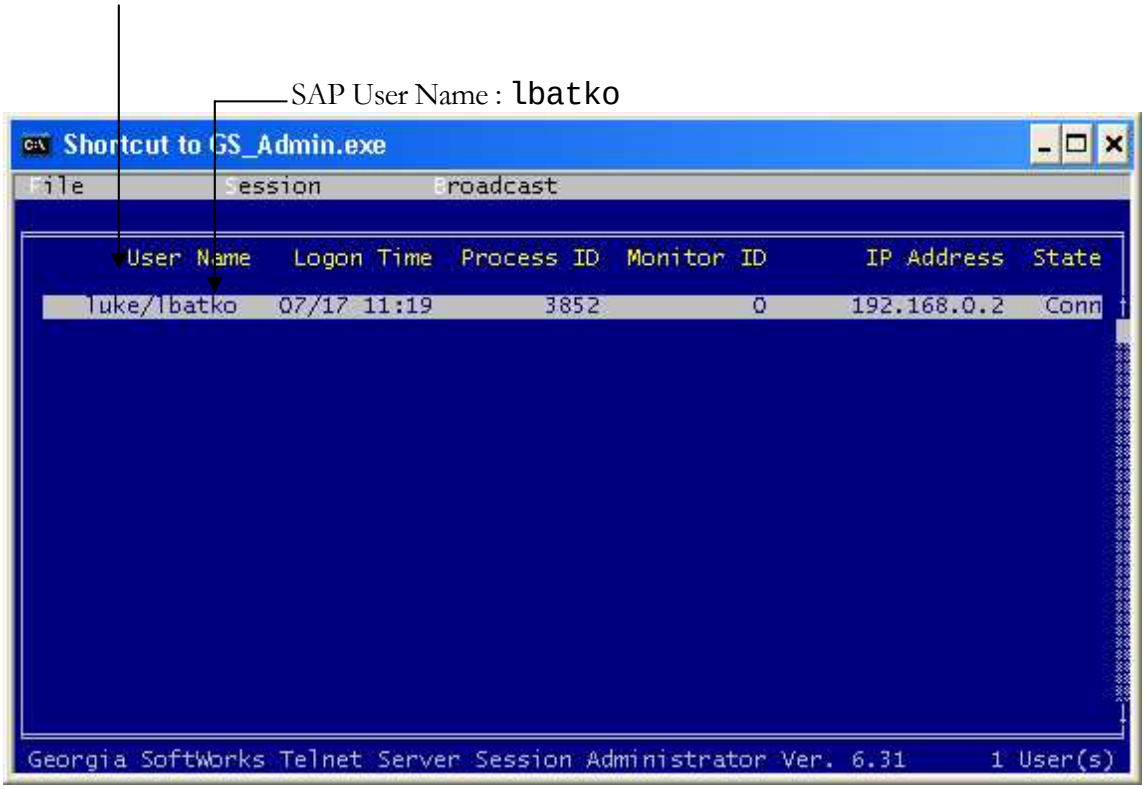


Figure 94: SAP User Name displayed in GSW Session Administrator

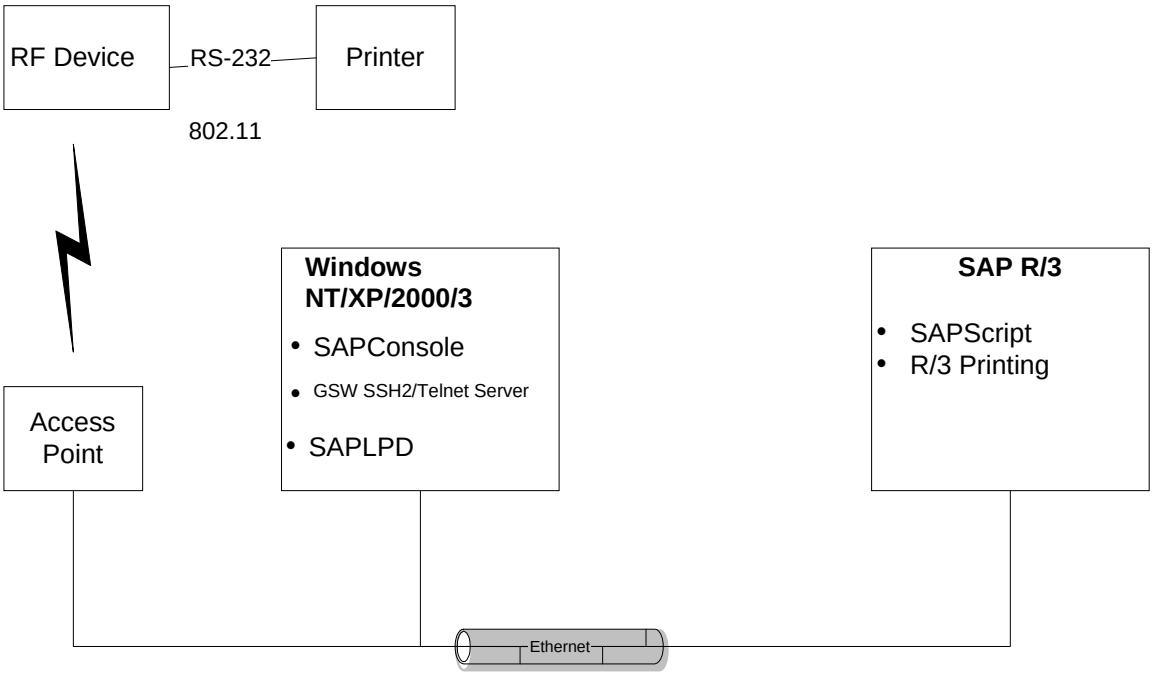
Mobile Device Printing with SAPConsole

One of the limitations of using SAPConsole is an ability to utilize local printers attached to an RF device. Georgia SoftWorks provides a native method of printing to serial (or tethered) printers. Using SAPConsole and the Georgia SoftWorks SSH2/Telnet Server, printing to tethered printers from R/3 becomes possible.

Some important aspects of this solution include:

- No special software is required on the RF device. Most RF emulation clients already support pass though printing.
- No special software is added to SAPConsole or R/3.
- This solution only works with the Georgia SoftWorks SSH2/Telnet Server.
- To utilize mobile printing, a user must have the same username for R/3 andSSH2/Telnet .
- The SSH2/Telnet Server can support each user type, mobile printing and non-printing clients. A different server is not required for RF users that do not require mobile printing.
- Mobile printers are seen by R/3, but are not controlled by R/3 (e.g. offline, paper out, etc.)
- The SAP printing application SAPLPD is required, and should be configured to run as a service on the SAPConsole machine.
- The capability to design labels and the R/3 business logic to print the labels are not part of this particular solution.
- All labels are created using sapscript (or 3rd party software that integrates with sapscript).

SAPConsole Mobile Printing Components



1. SAPConsole
   Standard SAPConsole installed from SAPGUI CD.

2. Georgia SoftWorks SSH2/Telnet Server
   - Configured for local printing.

3. SAPLPD
   - A known method of printing to local client printers that is supported by R/3. SAPLPD is installed by default with SAPGUI on SAPConsole machine.

4. Sapscript
   - All labels printed on a tethered printer are in fact, a sapscript form. Newer methods, such using BAR-ONE for R/3 from Zebra, allow WYSIWYG label designs to be uploaded into a sapscript form. Creating labels this way does not require learning the printer's command language.

5. R/3 Printing
   - Utilizes standard R/3 printing capabilities. All setup is completed in transaction SPAD. To R/3, a tethered printer appears like a local printer attached to the SAPConsole machine.

Configuration Details

Steps To Configuration

1. Install and Configure Georgia SoftWorks SSH2/Telnet Server
2. Configure SSH2/Telnet Server for Mobile printing
3. Configure each SAPConsole user for local printing
4. Install and configure SAPLDP on SAPConsole machine
5. Configure mobile printers in R/3
6. Modify RF device configuration to allow printing
7. Create sapscript form containing barcode label for mobile printer
8. Determine or create R/3 printing logic. (e.g. an R/3 transaction to print label using the proper sapscript form)

Install and Configure Georgia SoftWorks SSH2/Telnet Server

1. Install SSH2/Telnet Server as per instructions in user manual. There are no special installation options for mobile printing.

2. Create a Windows NT/XP/VISTA/2000/2003/2008 account for each user that will utilize mobile printing. The username **MUST** match the user's SAP R/3 login name.

3. Create "script" subdirectory (e.g. C:\GS_UTS\script\rfuser for user rfuser) and create the k_start.bat (login script) file for each user

Configure SSH2/Telnet Server for Mobile printing

1. Create a "virtual printer" on the SAPConsole machine.

In creating a "Virtual Printer" (or local mobile printer) the key information are the *Printer Name*, the *Share Name* and the P*ort*. The following steps are required to setup the printer:

- Click the **Start** button at the bottom left corner of your screen.
- Select **Settings** then **printers**.
- Double click on Add Printer. (The add printer window opens).
- Select **My Computer** and Click on Next
- Select the lpt1 port. Do NOT enable print pooling. Click Next.
- From the Manufactures list select **Generic**
- From the Printers select **Generic**/**Text Only**. Click Next
- Name your printer **GwtnPrinter1**. NOTE: This name is required. Click Next
- Select Shared and name the printer **GwtnPrinterShare1**. NOTE: This name is required. Click Next
- After the printer is created, double click on the printer icon.
- Pause the printer by selecting the menu item *Printer* and selecting *Pause Printer.* This printer must remain paused at all times. This printer cannot be used by any other service except Georgia SoftWorks Telnet/SSH2 Server.

Configure each SAPConsole user for local printing

1. Add the following line to each login script (k_start.bat) file for each user requiring mobile printing:

   set GWTN_LOCAL_PRINT_METHOD=SAP

Install and configure SAPLDP on SAPConsole machine

5. SAPLPD is installed automatically when SAPGUI is installed. If it is not already on the SAPConsole machine, it must be installed.

6. Using instsrv.exe and svrany.exe utilities from Windows resource kit configure SAPLPD to run as a service. Two steps are required to run saplpd as a service.

   a. The syntax for using these utilities is as follows:

      instsrv saplpd.exe c:\path\srvany.exe

      Note: the instsrv.exe and saplpd.exe should be in the current directory.

7. Add a registry key. In registry key HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\SAPLPD create a new sub-key named Parameters. In the Parameters key, create a new entry name Application. The value of this field is the part to the saplpd.exe file (e.g. c:\sappc\saplpd.exe).

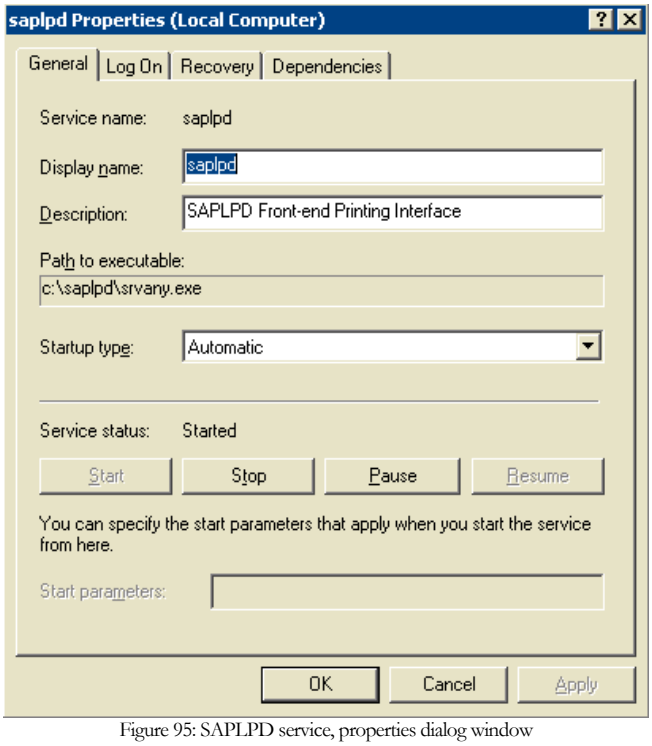


Figure 95: SAPLPD service, properties dialog window

Configure mobile printers in R/3

If all the users use the same printer only one mobile printer needs to be created in R/3. If multiple printers are desired, each printer should use the same "host spool access method" and "destination host" values specified below.

1. Create the mobile printer in R/3 using transaction SPAD

   - The device type should be ASCIIPRI or other device type for the particular printer being used.
   - The "Host spool access method" is set to "Print using SAP protocol" (type S).
   - The "Destination host" is set to the machine running the Georgia SoftWorks SSH2/Telnet Server (This can be network name or IP address). *Note: SAPLPD will need to be running on the host, or the SPAD transaction may not allow creation of the printer.*
   - Set the "Host printer" to GwtnPrinter1
   - Leave all other fields as the default. Do not select cover page or specify tray information

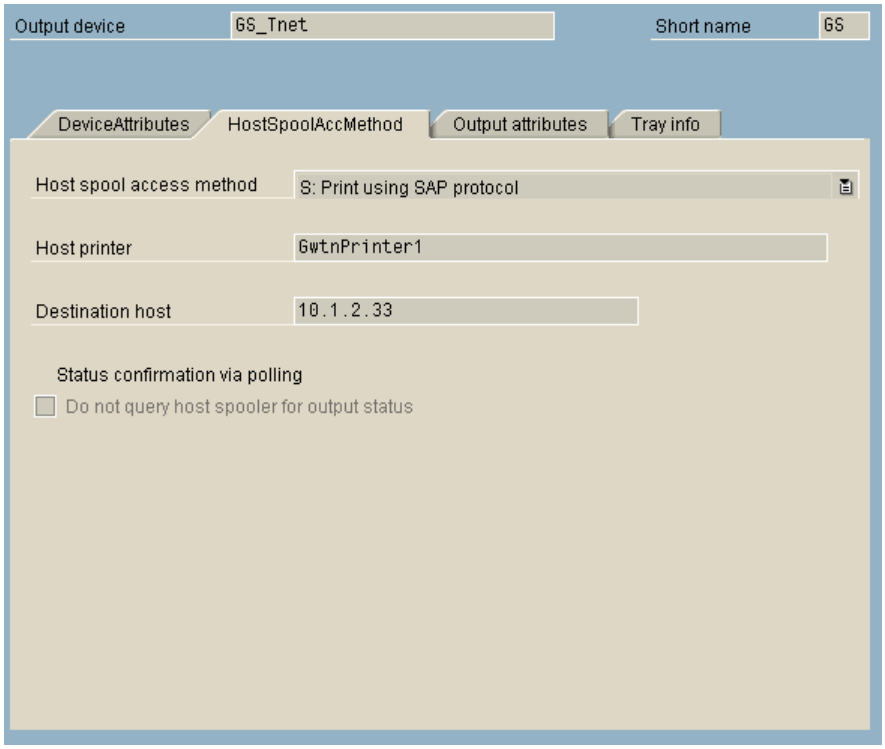


Figure 96: Sample SPAD transaction screen

Modify RF device configuration to allow printing

Each RF device and terminal emulation client has its own configuration to allow printing. Some devices allow more control over printers. For this application, the printer should be "dumb" and the RF device should not intercept or interpret any control characters. Lastly, the serial port parameters must be configured to match the printer's settings.

Create sapscript form containing barcode label for mobile printer

Create SAPScript form for label(s). Either manually or with BAR-ONE for R/3, create sapscript form(s) that represent labels to be printed on mobile printers.

Determine or create R/3 printing logic

This section varies and is left up to each individual organization. At a basic level, a SAPConsole transaction outputs data to a mobile printer defined in R/3. This can be accomplished with or without sapscript.

SAPConsole and the GSW Rocket Terminal Engine.

Maximize your SAPConsole and GSW SSH2/Telnet Server performance while adding important features by obtaining the Georgia SoftWorks Rocket Terminal Engine.

What is the GSW Rocket Terminal Engine?

Answer: The Rocket Terminal Engine is a HIGH Performance replacement for the SAPConsole VTIO Terminal Engine.

Why do I need a replacement?

Answer: Performance, Savings and Features

Sounds like Sales Talk?

Answer: The benefits are truly outstanding!

Performance:

Very Large number of sessions with expected performance.
Reduce the number of systems required for your application
Enable Application where not possible before

Savings:

Save the price of extra computer(s) hardware.
Save the price of extra computer(s) software
Save the continuing maintenance cost of hardware and software

Powerful and Useful Features such as:

Adjusted Logon Screen Size
Adjusted Logoff screen size
Configurable screen size
Capability to adjust the "Off Screen Fields" back on to the screen
Flexible translation of screen attributes with powerful new options not available in the SAPConsole VTIO Terminal Engine.
Full Support of SAPConsole Profiles

Contact Georgia SoftWorks for more information on the Rocket Terminal Engine!

sales@georgiasoftworks.com

Tel: 706.265.1018

Environment Variables Set by the User

Many environment variables exist for the users convenience. They are available to use in local and global login scripts to set defaults to eliminate prompting as well as setting values for special uses. The details are described it the appropriate section in the user manual however we have included a quick reference list here.

gwtn_color - Sets Color or Monochrome presentation for 3rd party clients (page 121).

gwtn_ctrl_c_mode - Sets <control-c> behavior (page 116).

gwtn_encrypt_session – Activates Data Stream Encryption for the session (Global or Per User) (page 78).

gwtn_ff_in_passthrough – Enables/Disables the trailing form feed in pass-through printing (page 181).

gwtn_graphics - Sets the graphics mode for 3rd party clients (page 119).

gwtn_home_dir – Selects the home directory that the User will be deposited into upon connection (page 229).

gwtn_job_control – Specifies to automatically terminate all child processes when a session ends (Page 114).

gwtn_local_print_poll_interval – Specifies the poll interval with which the gs_agent polls the GwtnPrinter*x* print queues. Values range from 1 to 10 seconds where the default is 5 seconds.

gwtn_local_print_cmd*x* - Indicates the printing command/index used by the Open Print Method (page 166).

gwtn_local_print_method - Indicated the True Client Side Printing method chosen (page 166).

gwtn_pp_print_buffer_size – Specifies the print data buffer size for passthrough printing. (page 182).

gwtn_reconnect - Enable Session Saver (page 102).

gwtn_reconnect_timout - Specifies how long a session will exist in minutes before Graceful Termination will initiate when gwtn_reconnect is enabled (Page 103).

gwtn_show_console_title – Displays application title on the Georgia SoftWorks SSH2/Telnet Client Window (Page 103).

gwtn_term - Sets terminal emulation for 3rd party clients (page 117).

gwtn_tcpwindowsize - Sets the TCP Receive Window Size (page 186).

lra_termination - Define the termination string that is sent to an application upon detected failures (page 110).

Environment Variables Set by the Telnet/SSH2 Server

Many environment variables are set by the SSH2/Telnet server and are available to the User or Programmer.

gwtn_agntpid - Process id of the Agent Process handling the user session.

gwtn_answerback – Answerback text passed from the GSW Client (page 73).

gwtn_client_ip - IP address of the client computer/device.

gwtn_client_mac – MAC (Media Access Control) address of the client computer/device.

gwtn_gsclnt – Set to 1 or 0 depending if a GSW or 3rd Party client is connected. If GSW then the value is 1 otherwise the value is 0

gwtn_hsocket - Socket handle of client session

gwtn_server_port –SSH2/Telnet Port associated with the session (page 215)

gwtn_tty - The Georgia SoftWorks SSH2/Telnet Server creates a `tty` name on a per session basis (page 212).

Registry Variables

Many registry variables exist for provisioning the system. Registry variables are an excellent method to configure software as to utilize already learned skills by the system administrator. There is no need to learn yet another interface to provision the software. Here is a list of the registry variables and a brief description of their use. Please see the appropriate section in the User Manual for complete descriptions.

All Registry values used by the Georgia SoftWorks SSH2/Telnet Server for Windows NT/XP/VISTA/2000/2003/2008 are stored in the following Registry path. For SSH2 Specific Registry settings please see the GSW SSH2 Server Users Manual.

- `HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\GS_Tnet\Parameters`

ActivityLogFileLength - Set the Log File Size (page 157).

AltPrefix - Configure a different Alt Prefix (page 123)

BellX - column of the bell character, initialized to 0xffffffff, which makes it inactive (page 211).

BellY - row of the bell character, initialized to `0xffffffff`, which makes it inactive.

BellChar - value of the bell character, initialized to 0x87

BellCnt – number of times the bell will sound, initialized to 0x01 (page 211).

ClntChkTimeout - Server Side Heartbeat. Set the frequency in seconds which to poll the 3rd party client for presence (page 108).

Domain - Set the default Domain for 3rd Party Clients. This is used to eliminate the prompting for the domain (page 213).

EnableEncryption – Enables the ability to activate Data Stream Encryption (page 79).

EnableRFC854Clients - Allows/Disallows connection from 3rd Party Clients. (page 85)

EnableNAWS – Enables Negotiate about Windows Size telnet option (page 126).

ESCDelay - Determine how long to wait for the next character after an escape is received to consider is part of the escape sequence (page 125).

InactivityTimout - Server Side Inactivity Timer. Set the time in seconds that defines the maximum allowed inactivity period (Page 106).

MaxSessions – Limit the total number of sessions for the SSH2/Telnet server (page 86)

RefreshChar - Defines a character that refreshes the screen. The default is 0x12 (page 188)

RequireEnryptedSession - Restricts connection to only encrypted sessions (page 92)

Configuration Text Files used by the SSH2/Telnet Server

The Georgia SoftWorks SSH2/Telnet server utilizes several ASCII text files for configuration.

banner.txt – Contains text to display to client before the logon prompt (page 195).

colormap.txt – Defines color to monochrome mappings (page 122).

gs_auto.txt – Automatic logon Pre-configuration file for GSW Client (page 95).

gs_ip_rt.txt – IP Based Login Scripting file (page 95).

gs_ipenc.txt – Encryption based of IP address scripting file (page 81).

GS_SClnt.bat – Batch file that launches the GSW SSH2/Telnet Client (page 69).

gs_sssh.bat – Batch file that launches the GSW SSH2 Client (page 69).

gs_color.txt – Specifies colors to re-map (page 126).

gsw_ldef.txt - Specifies events that maintained in the log file(page 155).

gs_logon.txt – Automatic logon Pre-configuration file for 3rd party clients (page 129).

gs_tinit.txt – Initialization characters to send to 3rd party client. (page 130).

gs_xchar.txt – Character translations definitions when sent to terminal/display (page 129).

thosts – Restrict Access based on IP address (page 83).

gs_1_usr.txt – Limit the number of connections by specific User ID (page 87).

gs_1_ip.txt – Limit the number of Connections from specific IP Addresses (page 89).

System Signature - IMPORTANT PLEASE READ

The registration software obtains a system signature that is unique to your system. This signature is an added security measure to inhibit unauthorized personal to obtain working copies of the Georgia SoftWorks SSH2/Telnet Server for Windows NT/XP/VISTA/2000/2003/2008.

The signature is comprised of hardware and software identifiers that exist on your system that make the target system unique. These identifies are hashed into a Product ID and a Serial Number can be generated from this Product id.

If major hardware components of your system are removed, replaced or modified your **Serial Number** may discontinue to work and you may need a new **Serial Number** to obtain access to the Georgia SoftWorks SSH2/Telnet Server for Windows NT/XP/VISTA/2000/2003/2008. Please contact Georgia SoftWorks Technical Support if needed.

Specifications

GSW SSH2/Telnet Server Operating System Platforms

The Georgia SoftWorks SSH2/Telnet Server operates on: Windows NT/XP/VISTA/2000/2003/2008 Versions.

The Georgia SoftWorks Telnet Server operates with 3rd Party RFC 854 Telnet clients and GSW Telnet Clients.

The Georgia SoftWorks SSH2 Server operates with 3rd Party SSH2 compliant clients and GSW SSH2 Clients.

GSW Telnet Client Operating System Platforms

Desktop Clients

The Georgia SoftWorks Desktop SSH2/Telnet Client operates on Windows 95/98/ME[33], Windows NT, Windows 2000, Windows 2003, Windows Vista and Windows rating System Versions.

Mobile Clients

Georgia SoftWorks Telnet Clients for Windows CE are available for

- Pocket PC 2002 class devices
- Pocket PC 2003 class devices
- Windows CE .NET 4.2
- Windows Mobile 5

Georgia SoftWorks SSH2 Clients for Windows CE are available for

- Many Windows CE Version 4.2 class devices
  Including but not limited to:
  - LXE MX3X
  - Intermec CK30
  - Psion-Teklogix 7535, Psion-Teklogix 8525
  - Symbol MC 9060G
- Pocket PC 2003 class devices

Please see the GSW SSH2 User Manual for FIPS 140-2 client requirements

Java Clients/Applets

Georgia SoftWorks Java Client and the Georgia SoftWorks Java applet – Telnet Only

Please read the section on the GSW Telnet Java Client (page 225) and the section on the GSW Telnet Java Client applet (page 217) to see the requirements for correct operation.

[33] Unicode is not supported

GSW SSH2/Telnet Server System Requirements

Memory:

GSW recommends 3 MB of RAM per session in order to utilize all the features offered in the GSW SSH2/Telnet Server. If you are using SAPConsole the recommendation is an additional 4+ MB of RAM per session for a total 7+ MB RAM per session. It is recommended to use the Windows Task Manager to determine the SAPConsole memory requirements for your system.

Processor

Processor requirements vary based on the primary or main application running on the host system. In general the processor requirements for running the number of instances of the primary application will be sufficient for most customers. However the type of application will ultimately determine the SSH2/Telnet processor requirements. If minimal and exact sizing is required the best course of action is to download the Free trial copy of the GSW SSH2/Telnet Server and empirically determine the requirements using the actual application.

Disk Requirements

At least 15 MB of Disk space are recommended for the program, user manuals and log files.

Technical Support Contact Information

For Technical Support.

In order to keep Technical Support Free please help us to keep our cost down.

1. Gather all relevant system information.

2. Write your question down. This not only helps us but also helps you in articulating the question.

If the question is not an emergency, please use e-mail at support@georgiasoftworks.com. We try to respond within 24 hours. Please use the email support tips described below when emailing support.

Or Call 706.265.1018 EST, M-F 9:00 a.m. to 5:00 p.m. and have your Product ID ready

Email Support Tips:

To expedite support for suspected problems please perform the following test steps below to help us diagnose the issue.

1. Disconnect all users. Make sure that no other user connects at the time of the test.

2. Wait 5 minutes

3. Delete all log files from the GSW SSH2/Telnet Server installation 'Log' subdirectory on the computer running the GSW SSH2/Telnet Server. (Usually c:\GS_UTS\Log)

4. To expedite resolution, reboot the Server if possible.

5. Duplicate the problem.

6. Send us at support@georgiasoftworks.com

    a. A description of the problem, including User ID's, Domain and IP Addresses.

    b. All files in the Georgia SoftWorks `log` folder. It is usually located at c:\gs_uts\log but may be different depending on the installation folder selected.

    c. The logon script associated with the user experiencing the problem. (That is the `c_start.bat` or the `k_start.bat` file that resides in the scripts folder in the GSW SSH2/Telnet Installation directory.

    d. And of course your contact information.

Or **Call 706.265.1018 EST, M-F 9:00 a.m. to 5:00 p.m. and have your Product ID ready**